DOCUMENT RESUME

ED 126 567 80 EA 008 509

AUTHOR Falk, Kristin J., Ed.
TITLE Exploring Concerns of Productivity in Education.
INSTITUTION Wisconsin State Dept. of Public Instruction, Madison.
SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C.
PUB DATE Nov 75
NOTE 98p.; Papers presented at the Upper-Midwest Regional Interstate Project Conference (Madison, Wisconsin, October 28-29, 1975); For individual papers, see ED 116 309 and EA 008 510-513

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.
DESCRIPTORS Educational Research; *Efficiency; Elementary Secondary Education; Measurement Techniques; *Productivity; *Program Development; *School Systems; *State Departments of Education; *Systems Approach
IDENTIFIERS Elementary Secondary Education Act Title V; ESEA Title V

ABSTRACT

The five speeches contained in this document all address the general problem of productivity in education. Most of the speeches focus on the productivity issue at the state level, but individual speeches also deal with the question of the applicability of the private sector's methods of increasing productivity to the public sector, the research needed in education, and the introduction of systems concepts to education. (IRT)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED126571 - ED126571

EA 008 513 - EA 008 503

Exploring Concerns of Productivity in Education

An Upper Midwest Regional
Interstate Research Project

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION
Barbara Thompson, Ph.D. / State Superintendent

Interstate Project for
State Planning and Program Consolidation

Participating States	Chief State School Officers	Policy Committee
Illinois	Dr. Joseph M. Cronin	Mr. Emmett Slingsby
Indiana	Dr. Harold H. Negley	Mr. Ray Slaby
Michigan	Dr. John Porter	Mr. Alex Canja
Minnesota	Mr. Howard Casmey	Mr. Gregory J. Waddick
Ohio	Dr. Martin W. Essex	Dr. Paul Spayde
Wisconsin	Dr. Barbara Thompson	Dr. Archie Buchmiller

Dr. Robb L. Shanks
Project Director

Mr. Dexter Magers
USOE Coordinator

Project Office:

Wisconsin Department of Public Instruction
126 Langdon Street
Madison, Wisconsin 53702

Financed by funds provided under the Elementary and Secondary Education Act of 1965 (Public Law 89-10, Title V, Sec. 505) and the sponsoring states. The activity which is the subject of this report was supported in whole or in part by the U. S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U. S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

Foreword

The Policy Committee of the Upper Midwest Regional Interstate Research Project agreed upon a productivity conference as one of their priorities for 1975-76. Wisconsin, as the administering state for the conference, contracted a series of papers which were presented.

Mr. Will Ashmore from the Wisconsin Department of Public Instruction organized and chaired the conference. Thanks are due to Ms. Kristin J. Falk in the Wisconsin Department for her assistance in editing this document.

Robb L. Shanks, Ed.D.
Interstate Project Director

November 1975

TABLE OF CONTENTS

		Page	
1.	History of Productivity and Research Needed in Education . . . . . Crist H. Costa	1	
2.	Increasing Productivity in Education: A Few Seminal Ideas . . . . . Leon M. Lessinger	2	EA 008 510
3.	Productivity in the Private Sector and Its Application to the Educational Enterprise . . . . . Fred C. Schwarz	45	EA 008 511
4.	Some Concepts to Consider in Mearuring the Impact of SEA and LEA Services. . . . . Stanley A. Rumbaugh	73	EA 008 512
5.	Implementing A Productivity System at the State Education Agency Level. . . . . James W. Colmey	84	EA 008 513
	Conference Agenda: Exploring Concerns of Productivity in Education.	97	

HISTORY OF PRODUCTIVITY AND RESEARCH NEEDED IN EDUCATION

Prepared by

Crist H. Costa

C

Introduction

Since the advent of Robert McNamara's Systems Approach, "MBO," "PPBS," Productivity," "cost accounting," "zero-based budgeting," "input," "output," feedback," and related terms from the business world have again entered the working vocabulary of educators. "Accountability" has been with us for a few years now and productivity has joined it. Callahan (1962) notes that interest in efficiency and productivity has been a conscious concern of school administrators since the early 1900s. While concern for efficiency and productivity is not new and the use of systems terminology is not new, the intensity with which the jargon is used is relatively new. Unfortunately, the technological terms have frequently become distorted and value-loaded through attempts to apply them to compelling economic and political issues. As a result, administrative attempts to implement processes associated with the terms as well as attempts to increase teacher productivity has been perceived by teachers as an unreasonable demand to provide more service for less money (Selden, 1973). MBO and accountability have been perceived as shibboleths proposed by administrators to eliminate teachers who have given many years of dedicated service to a system which now finds them too expensive. Greider (1972) suggests that teachers tend to use the word "accountability" in the same sense as culpability.

This paper will attempt to relate the terms accountability and productivity to an educational context; to identify criteria presently used for the measurement of productivity; to report upon some of the current practices used to increase productivity; and to propose some directions for future research.

Accountability

The "accountability movement" in education might be said to have started with Plutarch (Wynne, 1972, p. 30).

> Fathers, themselves, ought every few days to test their children, and not rest their hopes on the disposition of a hired teacher;

> for even those persons will devote more attention to the children if they know they must from time to time render an account.

In more recent times, one of the foremost proponents of accountability has been Dr. Leon Lessinger. His words have fallen upon receptive ears for they come at a time when the public consciousness is focused upon the cost of public services in general and the cost of schooling in particular. Concern was most evident when the relevancy of school curriculum was challenged by students as well as adults. Other evidence is found in the apparent aimlessness of high school graduates reflected in the highly reported, and probably exaggerated, experiments with drugs and sex; the war; and American values in general.

As Neal Sullivan, the former Massachusetts Commissioner, suggested, education is merely being asked to give an account of its stewardship. His definition of accountability is that:

> every person (or group) in the organization is answerable (or responsible) to some degree, to another (or position) for something (or objectives) expressed in terms of performance levels (or results or achievement) to be realized within certain constraints (Hostrop, et al., 1973).

Varying definitions appear, but the focus has been on schools proving that students at various levels meet some reasonable standard of achievement. Kruger's (Sciara and Jantz, 1972) definition of accountability adds the requirement that the educational institution provide programs which develop the human potential and efficiently utilize the resources allocated to it. Mortimer (Hostrop, et al., 1973) suggests that while evaluation is concerned with effectiveness, "accountability is concerned with effectiveness and efficiency." In the same article, he suggests that accountability is the legal liability assigned to the performance of a task. Alkin suggests the need for different types of accountability (Hostrop, et al., 1973). He suggests that goal accountability, program accountability, and outcome accountability can be derived from

the question, "Who is accountable to whom for what?"

To paraphrase a Biblical saying: As the word came, so the word became flesh. When the word became flesh, education was introduced to the idea of accountability centers, statewide accountability systems (Porter, 1973), the Independent Accomplishment Audit (IAA) (Hostrop, et al., 1973), performance contracting, and evaluation models.

One obstacle to the implementation of accountability systems was the reaction on the part of the individuals who were to be held accountable. Turney (1974) indicated that the major flaw is the wide scope of possible meanings. Instead of being accountable to a single-interest group, education is accountable to a number of groups who are rarely in accord. While one group is seeking accountability in terms of fiscal economy, another is seeking larger expenditures to increase educational opportunity. The fact that New York City has a heavy indebtedness--partly as a result of heavy City service salaries--yet hesitates to reduce the work force because of already high unemployment, is an example of a similar situation outside of education. Turney further suggests that strict accountability requires precisely defined and reasonably static targets. These are seldom found in education, partially because they seem antithetical to the concept of education being flexible to meet the needs of the individual. To accommodate these differences requires strict adherence to an established set of priorities. This has not been possible in the past, and presently it seems there is little likelihood that it will occur in the future. Since priorities must be set via the political process, they are likely to remain constant only as long as the political support remains.

While Lessinger and others see accountability to the student and the public as being one in the same, others see them as two conflicting referent groups and any attempt to serve both as self-defeating. Selden (1973) suggests that the term has become a teacher slur. If one is seeking increased productivity,

teachers must be given the necessary authority and responsibility for developing the methods which make them most productive.

The State of the Economy

Little can be added to our awareness of the state of the economy than has already been regularly reported in the newspapers. The economy appears to be out of its slump, yet economists differ as to the real strength of the upsurge. The health of the economy and the need and ability to increase productivity of the labor force are inextricably intertwined. Approximately one-half of the GNP and two-thirds of today's work force are applied to services rather than the production of goods. One of every six workers is employed in government and 80% of these employed at the state and local level. Over 22% of the nation's GNP is presently needed to support these services as compared to 13% in 1950. Between 1951 and 1970, the number of people employed by local government increased by close to 120% (Buchmiller, 1975). Despite this increasing demand for public service, Hatry and Fisk (1971) could find "no local government function for which comparative or aggregative, across-the-nation, meaningful productivity data had been calculated or indeed could be readily calculated." In an earlier report by the Commission, it was stated that a basic prerequisite for increasing productivity is an expanding economy with maximum employment and maximum utilization of plants and machines. In the absence of such expansion, there is lagging productivity and under-employment (National Commission on Productivity, 1972).

While a healthy economy is a prerequisite for increased productivity, the concern over increased costs for governmental services has led to freezes on employment, and in Rhode Island, a freeze on all public employee salaries for one year. In cities like New York, these policies are insufficient, so demands for employee cuts are heard but unheeded. Since unemployment is already high, is it any wonder that employees see the cry for productivity as a management ploy to provide the same amount of work with fewer people?

If the economists are to be believed, the dilemma in education can only become worse. William Baumol of the Department of Economics at Princeton University states:

> For a while in the progressive sector, productivity increases will serve as an offset to rising wages, this offset must be smaller in the non-progressive sectors (education). Thus, the very progress of the technologically progressive sector inevitably adds to the cost of the technologically changing sectors of the economy, unless somehow the labor markets in these areas can be sealed off and wages held absolutely constant, a most unlikely possibility. This suggests, as productivity in the remainder of the economy continues to increase, costs of running the educational organizations will mount correspondingly, so whatever the magnitude of the funds they need today we can be reasonably certain that they will require more tomorrow and even more the day after that (Fleishman Report, 1973).

Thus, labor costs in education and other areas of governmental service increase as a result of increased wages in the progressive (industrial) sector. Unfortunately, this increase in labor costs reflects salary raises and is not related to an increase in productivity. An example of this dilemma is demonstrated in military expenditures. The increased cost of labor for an infantry rifleman is more a reflection of the increased labor costs in a volunteer army that it is an increase in productivity.

Economic Models

Productivity in its simplest definition is simply real output per hour of work. This definition serves as a measure of the effectiveness with which labor is utilized. With this definition, it is easy to see why increased wages are tied to increases in productivity. If all production costs, except labor, are held constant, and production of units per hour is increased, then wages per hour can be increased at a rate equal to the increased rate of productivity, yet maintain the same per unit cost. Unfortunately, at a time when other production costs (cost of borrowing capital, cost of energy, cost of raw materials) are constantly increasing, then productivity must increase to simply maintain the same per unit cost even if wages are constant. This definition focuses upon quantity of goods produced per unit cost. While this simple definition doesn't appear to reflect a quality measure, the per unit price the consumer is willing to pay is in fact an indication of the quality of the goods or services. The concern for increased productivity is obvious.

Without increases in productivity, the costs of goods and services will continue to rise, for the per unit cost of the items rises as a function of the labor costs rather than an increase in quality. This increase is one definition of inflation.

In areas of manufacturing, units of output tend to be more easily measured than in the service sector. The number of completed cars, dresses, guns, books are easily counted. Without a directly quantifiable factor, as in the provision of services, substitute indicators are sought. In education, it is common to use an indicator such as student contact-hours to serve as a measure of productivity. A student contact-hour would be one student having direct contact with a teacher for one hour for the purpose of instruction. The more students con-

tacted per unit of labor cost, the higher the rate of productivity. In this case, the unit of productivity is not directly related to a unit of identifiable output, instead it is related to units of activity or service provided. This level of activity is expected to have some inherent worth. Other substitute indicators of educational "products" are marginal increases in student skills, or number of jobs created or filled as a result of a program. If the only purpose of schools were to dispense knowledge or provide training in skills, the assessment of output would be difficult. One could count the number of students enrolled in school or the number of hours of teaching provided, but assessment of the results of these two joint activities would be more difficult. If instead, as Boulding (1972) notes, there are more frequent but less noted services provided--such as custodial service or "child sitting," certification of teachers and community activities such as concerts, plays, sports, and adult education--then the measurement of output is somewhat easier. "Body counts" such as enrollments, graduates, attendance, are all output indicators from these services. Unfortunately, education is expected to meet all of these expectations on approximately the same level of priority.

In applying the tools of economic analysis of the educational process, it is expected that a careful analysis will permit the selection of the appropriate mathematical model, permitting the identification of the optimal blend of goods and services to optimize the teaching/learning situation (Lukitsh and Sesskin, 1973). In industry, production functions have been relatively well defined and saddle points identified. In education, much has yet to be learned about these functions in relation to the learning process.

Elementary economics reminds us that production functions tend to appear as an S-shaped curve. With such a curve, one can knowledgeably predict the likely return for any given amount of invested resources.

To increase productivity, one hopes to change the shape or position of the production curve on the graph, the intended result being to increase the results (learning, number of opportunities, experience) for the given amount of investment. Three possible strategies for such a change are:

1. Increases in efficiency;
2. Changes in the mix of services;
3. Changes in the kinds of clients.

Since education is presently a labor-intensive industry, increases in efficiency might come from workers (teachers) working faster or differently. Another approach is to provide training and resources for the staff so as to make them more efficient and productive. Both of these approaches require increased costs. To simply demand more work for no increases in rewards is likely to require an increase in supervision costs. The second approach requires investments in training as well as released time for the training to take place: with most contracts, more salary is paid to employees with advanced training, thus the increases in productivity would have to be great enough to offset the increased costs due to the increased training. One could also seek increases in efficiency through a heavier emphasis on capital investment for equipment and/or differentiated staffs to increase productivity. Both approaches would likely involve large start-up costs and it would be some time before benefits might be realized. Presently, school systems are trying to keep budget increases less than or equal to inflationary costs. No new monies are present. Without adequate finances to meet present obligations, it is unlikely that districts will invest large expenditures for expected long-term gains.

To bring about a change in service mixes, one should first be apprised of the relative effectiveness of the existing blend of services and the options available for change. While the research provides some answers as to the relative worth of large group vs. small group instruction, reading program A vs. reading program B, as well as other kinds of services, for the most part, cost benefit estimates are not available for entire systems.

P.P.B.S. offers an option for districts to view their range of services on a program basis and consider budgeting on that basis rather than considering services only as separate items on the budget. Unfortunately, educational services, like other governmental services, appear to have a Parkensonian desire to grow and almost never have a desire to shrink. With the present decision-making capability, changes in services mixes are unlikely. To achieve a change in clients would likely require that the school consider not serving those clients who require an inordinate amount of resources. Presently, these are exactly the clients that schools are required and subsidized to serve. Additional monies are made available to districts to serve the students who are most difficult to serve.

A more disheartening observation is that offered by Boulding. He suggests that educators receive their incomes mainly from the by-products of education--custodial care and certification (Boulding, 1972). If an educator is successful in becoming a more productive teacher, the expected reward is usually not monetary but rather to become an administrator, a master teacher, or have some other responsibility resulting in a reduced commitment to teaching.

Research in Management Science

The nature of man has long served as a topic of inquiry. Since increased productivity has, for a long time, been a function of increases in labor productivity, investigations of the relationship between the individual, the organization, and the interaction's impact upon productivity has been interesting. The impact of Frederick Taylor's concept of scientific management is frequently considered to be the first effort to study man's work scientifically and relate that work process to output. Mayo and the others who conducted the Hawthorne experiment, found that the quality and quantity of attention focused on employee needs are more determinant of productivity than the physical variables of the work place. The studies of Lewing, Lippit, and White indicated that a conscious

manipulation of the authority structure within a group can affect the group's behavior and output. Douglas McGregor's theories X and Y offer explanations of the nature of man which provide clear challenges to administrators. If the manager accepts McGregor's premise, the manager is challenged to create conditions which permit members of an organization to achieve their personal goals while also completing those of the organization. While McGregor realized that a perfect match was not likely, the closer the match, the greater the productivity. Blake & Mouton developed models to describe various managerial styles. Likert's work corroborated that of Blake and earlier social scientists. Their findings included, among other things, that:

1. Integration of individual needs for affiliation and self-expression with the organization's goal to produce is possible to a greater degree than thought possible.
2. Organizations with a high degree of integration produce more.

Argyris argues similarly that managers have an enormous impact on their subordinates' growth or lack of growth. The managerial principles of chain of command and span of control clearly permit the top manager to experience more control of self and environment than their subordinates.

Morse and Lorsch (Luke, 1975) conclude from their studies that, despite the awareness of the organization's impact upon the individual, there is no one best model of organizational structure. Repetitive work might best be done in a traditional structure while more abstract conceptual work might require great individual autonomy. A successful model must account for the workers and their idiosyncratic needs. In the companies studies, it was found that individual competence, motivation, and productivity were more a function of the degree of integration than organizational structure. Herzberg's studies (1966) of variable affecting job satisfaction and morale are those frequently requiring a minimal increase in expenditure. These variables were the intrinsic aspects of the job

(achievement, recognition, the work itself, responsibility and advancement). Negative variables were extrinsic to the task (interpersonal relations, supervision, company policy, working conditions, possibility for growth, personal life, job security and salary). The implementation of this knowledge to the world of work has been the concern of organizations and leadership theorists for sometime. One of the current labels for this effort is organizational development or OD. Hackman (1975) suggests that job enrichment is the darling of the mid-70s and suggests do's and don'ts for the process. Since there is a dearth of evaluative data on job enrichment strategies, more needs to be known before it is adopted on a wholesale basis.

National Commission on Productivity

The National Commission of Productivity was created by President Nixon in June, 1970. With the new Phase I, II and III economic policies and related wage and price ceilings, the role of the Commission was broadened to assist in the design of the post-freeze economic stabilization program and to serve as consultant to the Cost of Living Council. The Commission was further directed to organize regional and local councils, expand their research program, and develop a stronger program to foster public understanding of productivity growth (NCOP, March, 1972). In addition to commissioning research efforts, the Commission identified six areas for future investigation.

1. Productivity bargaining;
2. Strengthening of manpower adjustment policies;
3. Education, research, and development;
4. Improvement of productivity of government;
5. Assessing the extent to which institutions have an adequate supply of capital for future growth;
6. Identifying industries with lagging productivity growth and identifying practical measures for their improvement.

Efforts at the LEA Level

On local educational levels, efforts to increase academic productivity have been serious, but results are mixed. Performance contracting, performance-based teacher education, use of paraprofessionals, CMI, and cost-benefit analysis are a few of the efforts attempted at the classroom level, but teacher opposition and inadequate implementation has often frustrated these efforts. Some bases for the teacher opposition were mentioned earlier. One additional factor of concern is the use of standardized achievement tests as the device for measuring productivity. Although standardized tests reduce the temptation of teachers to lower standards to insure higher productivity, they still have shortcomings which reduce their utility. These tests tend to be less sensitive to curricula designed for particular community needs. Teachers also feel that when schools focus upon changes in test scores as measures of "efficiency and productivity," the institution commences to have little concern for less tangible but equally important goals (citizenship, values). A final criticism is that school regimentation tends to result in rigidity of methods (House, p. 66). One possible solution to this opposition has been to incorporate productivity on a systemwide basis rather than the classroom level. Kalamazoo, Michigan has a public school board which designed an employee evaluation and accountability system that "rewards excellence and stifles mediocrity" (Jones, p. 32). The most unusual feature is the superintendent's contract which stipulates that his pay be based upon a sliding scale depending entirely upon his performance, and his school system's productivity. Similarly, in the Lawndale School District in California, the school board began a system of performance-based productivity at the top. "The superintendent's willingness to be held accountable will very soon reflect itself in its benefits to the district" (Ricketts, p. 70) as he is able to focus his attention more on action rather than reaction. It has been found that as the top levels begin to

exhibit the advantages of productivity, teacher personnel and administrative persons better accept the system for themselves. Better communication has been exhibited on all levels: students have been treated, contrary to belief, as human beings: performance has been measured not only by achievement tests, but also by teacher checklists, observation and criterion-referenced tests.

Efforts at the SEA Level

State educational associations have become concerned in recent years as to how funds may be most efficiently and effectively allocated so that productivity in their local school districts might increase (Buchmiller, 1974, 1975). They have found strong evidence of public support of educational expenditures when funds are productively utilized, when the community is involved in the planning process, and when the communications line is kept open on the progress and objectives of a state's school administrators (Moore, p. 24). Many state-level associations have studied ways in which to improve productivity but few have implemented any statewide programs. Due to the increase in public costs in education, Governor A. A. Moore, Jr. of West Virginia developed a task force designed to study the implementation of more efficient methods and procedures in local public education. Their report included 118 recommendations that could produce more efficient schools in all aspects. By making the education dollars go farther, the tax burden on the citizen is relieved. A different approach was utilized in Michigan where statewide educational goals were identified and evaluated. Evaluation was on the level of assessing individual student performance and overall program effectiveness. The ultimate performance objective on the state level is to provide the student with the minimum skills necessary to take full advantage of the adult choices available to him.

Perhaps the most exhaustive effort to review educational policies and their impact upon a state is contained in the three volumes of the Fleischmann Report, issued in 1972. One conclusion was that better performance in the schools can be

obtained with no increase in cost by changing the recruitment, training, salary structure, certification procedures, job assignment, and working conditions of school personnel. Some recommendations for change include:

1. A licensing and salary structure to establish four categories of teachers. Master Teachers (the top level) comprise approximately 10% of the staff at a salary comparable to the principal.
2. Lighthouse schools be established to provide training centers for intern and apprentice teachers and provide opportunities for applied research.
3. At least 90% of the supervisory staff should assume classroom teaching responsibility equivalent to 1/5 of the workload.
4. Move toward statewide collective bargaining.
5. Establish a single statewide pension plan.
6. Greater specialization of teachers with an increased use of paraprofessionals.
7. Greater use of television.

Efforts in Higher Education

Productivity in higher education is much more difficult to ascertain due to the existence of the wide variety of services provided by an individual institution. Educational productivity on the post-secondary level must not only concern itself with the institution's academic service but also with research and public services (Bowen, p. 194). Dr. B. J. Priest, Chancellor for the Dallas County Community College District, has proposed for the coming 1975-76 school year a 5% increase in productivity of his operation. He does not, however, attempt to describe how this may be done. He feels that asking for "this proposed 5% increase in productivity is not asking anything extraordinary" (B. J. Priest, p. 20). This can be accomplished, he explains further, because manufacturing and industry have had a 3% increase per year and agriculture a 5% increase or more.

Maintaining quality is the major factor with which higher education is concerned in the search for optimal efficiency and productivity, and it should not be forsaken. What Dallas County proposed in order to maintain quality is that pay salaries be dependent upon the specified increase in productivity as well as maintenance of quality. Many feel, as W. W. Wortman does, that "the difference in productivity between educational institutions and commercial enterprises has contributed to the increasing cost of government (education), as members of the teaching profession try to maintain their relative income position while productivity virtually stands still" (Wortman, p. 23). On this basis, Nassau Community College instituted a cost-analysis system which decreased cost input while at the same time increased its productivity output. This was accomplished through an in-depth analysis by the college computer center. Through this analysis of past performance, the college community could more efficiently plan for the future (Lukitch & Sesskin, p. 26-27). Though higher institutions have always had to defend their budgets, lack of faith in the Establishment, economic insecurity, and lowered priorities for higher education (Henry, p. 288) have made it quite necessary for post-secondary institutions to incorporate massive self-examination procedures. Even though productive outcomes are less apparent in the short term period, efforts must be enumerated so as to win the support of the cost-conscious public.

Efforts by the Western Interstate Commission on Higher Education and the National Center for Higher Education Management Systems have resulted in computer models such as the Resource Requirements Production Model (RRPM). These models and the associated standardization of definitions and terms have provided some assistance in developing a common measure for IHE productivity. As work progresses, better measures of productivity and better measures of the relationships between costs and output are likely.

New Directions for Research

The pessimistic tone of the paper is not indicative of my hopes for the future. I would like to suggest at least seven areas in which additional research should prove fruitful.

One of the first areas in need of consideration is the definition of productivity itself. The identification of productivity indicators is the first step toward better knowledge of the educational production function. A perusal of the bibliographic material in this paper reflects how little has changed over time. For example, in 1913, at the NEA proceedings, Dr. Frank Spaulding, a superintendent of schools in Newton, Massachusetts had the following observations:

> I know of no single adequate measure of the efficiency of a school either relative or absolute. Some index or measure which could be used is the percentage of children of each year of age in the school district that the school enrolls; the average number of days attendance secured annually from each child; the percentage of the children of each age who are allowed to complete their schooling... (Callahan, 1962, p. 69).

The concern for adequate measures still exists. The measures proposed by Spaulding, despite their inadequacy, still remain today as partial indicators of efficiency or productivity. The teacher-effectiveness formula proposed by Kauffman, et al (1973) represents one new approach. More are needed.

A second focus of future research is the area of program definition. While the current emphasis on the establishment of objectives for schools and programs, the use of criterion-referenced tests, and other similar efforts toward the identification and quantification of outputs is a positive step toward the establishment of a definition of quality education, this is not enough. I am reminded of Callahan's notes regarding a 1912 editorial by Cubberly, the Dean of the School of Education at Stanford. Cubberly suggested that with the adoption of scientific management:

> ...pupils would be carefully examined and properly classified and they would chart their progress and see their deficiencies. Teachers would know what was expected of them and principals and supervisors could tell at a glance whether pupils or rooms are making proper progress.

It seems that the system approach and a desire for a MIS was alive over sixty years ago. While the need for the systematic establishment of instructional goals was identified, little regular progress has been made until now. Continued efforts will permit better measures of productivity. Research will be needed to identify the relationships between activities and output.

A third concern might by itself serve to increase productivity as a natural by-product of its original intent. I am suggesting the adoption of a more efficient record-keeping system. Most, if not all, of the present teaching systems require large amounts of reliable, systematic record-keeping. Sound research and evaluation require similar amounts. Yet, for the most part, school record-keeping is performed by teachers and principals with paper and pencil. Annotated records are written by hand. With few exceptions, uses of dictation equipment, data processing equipment, photocopiers, and other labor-saving devices are seldom seen below the top management levels of school operations. Without better record-keeping, new and/or reliable measures are difficult to secure.

A fourth concern is the teaching process itself. The work of Eaton Conant and his study of Teacher and Paraprofessional Productivity (1973) offers some illuminating insights into the teaching activity. His findings were based upon a full day of observation of twenty teachers in a conventional classroom setting and twenty-seven teachers in a classroom utilizing a paraprofessional. One purpose of the study was to observe the teaching act, and categorize the activities into minutes of "instruction, routine, non-learning, other, and out of classroom." The findings indicated that in a conventional classroom, on the average, 92.04 minutes of a 5 1/2 hour school day was spent on instruction. This can be contrasted with 109.29 minutes in a classroom with a paraprofessional. Among his conclusions he states:

> It is clear that teachers who worked with paraprofessionals did not achieve a greater specialization in instruction and related professional tasks...In almost all respects, their work results were quite comparable with the work of their peers who worked without the assistance of paraprofessionals. (p. 62)

> For the research personnel who carried out the study, the most surprising general findings remains that teachers were still able to instruct for only a relatively small portion of the total class day...These study results for teachers imply that teacher work roles will have to be significantly changed if the division of labor is to be redesigned to achieve more professional work. (p. 63)

> If there is one recommendation that emerges clearly for practical implementation from the work study, it is that schools experiment more with staff assignment plans that place paraprofessionals full-time in the homeroom role while teachers function as full-time instructors who visit classes during the day primarily to teach. (p. 64)

Aside from his findings, his development of a standardized system for analyzing work is useful. With it, the teaching act can be observed and adequate information gathered for the sake of restructuring it. Without a better understanding of the teaching act, as it presently exists, suggestions for greater utilization of paraprofessionals and/or some other type of teacher replacement will be less than successful.

A fifth direction relates to the issue of employee motivation. If, as Hackman suggests, job enrichment is the darling of the mid-70s because of its potential for more satisfied workers and consequent increased productivity, educational institutions will have to consider their adoption and implement thorough evaluation schemes. Since this will require time, our present efforts could be focused upon industrial methods, and the evaluation of those methods as they apply to education. While literature highlights studies which have investigated relationships between leadership behavior and/or organizational climate, decision-making, job satisfaction, and other concerns, less is known about successful strategies to change the climate or leader behavior. Hackman (1975) states that little more is known about successful strategies to implement

job-enrichment programs. More must be known before adoption can be considered on a wide spread basis.

A sixth concern is for investigations of successful strategies to implement innovative practices. Pincus (1974) notes with some pessimism:

> How would we expect a self-perpetuating bureaucracy to respond to R & D findings if (1) it is not market-oriented; (2) it is widely considered to be socially necessary and therefore deserving of public protection--it is, in fact, the captive servant of a captive clientele; (3) it is open to a good deal of public scrutiny on issues having to do with perceived equity, quality, and goals; (4) it cannot unambiguously define its aims or clearly identify technologies that are dominant in light of aims that might be specified; (5) its contribution to its clientele's life and learning is uncertain and also modest as compared to other societal influences; (6) its governance is highly decentralized, yet subject to a wide variety of influences, so that each unit perceives itself as facing a unique configuration of clients and masters? (p. 115)

He further notes that unlike a competitive firm, a school system should be expected to:

A. Be more likely than the competitive firm to adopt cost-raising innovations, since there is no marketplace to test the value of the innovation (e.g., smaller class size) in relation to its cost.

B. Be less likely than the competitive firm to adopt cost-reducing innovations, unless the funds so saved become available for other purposes within the district.

C. Be less likely than the competitive firm to adopt innovations that significantly change the resource mix (e.g., a higher ratio of teacher aides to teachers, sharply increased use of capital-intensive technologies), because any consequent productivity increases are not necessarily matched by greater "profits" to the district, and because any replacement of labor by capital may threaten the guild structure of the schools.

D. Be more likely than the competitive firm to adopt new instructional processes or new wrinkles in administrative management that do not significantly change institutional structure.

E. Be less likely than the competitive firm to adopt innovations that change in accustomed authority roles and established ways of doing business, because changes in these relations represent the heaviest kind of real cost to bureaucracies.

F. Be equally unwilling as competitive firms to face large-scale encroachments on protected markets (voucher systems,

metropolitan-areawide open enrollment), although for somewhat different reasons. (pp. 117, 118)

His review of the research in this area identifies three factors favorable to innovation in the school:

1. Bureaucratic Safety - When the innovation is perceived as favorable with respect to the current status and organization of the bureaucracy (because in a self-perpetuating non-market system, these bureaucratic values become socialized and tend to dominate other criteria; or in other words, the bureaucratic costs are the real costs of the system).

2. Response to External Pressure - When external pressures for innovation are perceived as irresistible (because school systems cannot be entirely unresponsive to external pressures and financial contraints).

3. Approval of Peer Elites - When key figures in the bureaucracy and their colleagues in other educational bureaucracies can agree about the acceptability of the innovation (because in the absence of clearly defined output criteria, consensus among the elite is often the primary decision-making criterion). (p. 120)

He concludes with recommendations which merit our consideration.

1. More large scale experiments are necessary to demonstrate that they can or can't work in a variety of settings.

2. Since the evidence indicates that administrators rely on personal contact for R & D information, R & D must be more closely tied with administrators and representatives of teacher organizations from the beginning. In addition, more seminars, etc. need to be offered at a time and in a manner in which all can attend.

3. More case studies are necessary to identify the implementation process.

4. More must be known of the incentive patterns which encourage adoption.

5. New incentive systems may have to be developed.

These recommendations are all based upon his fundamental conclusion that:

> If goals are in some sense undefinable, it is inappropriate to adopt the standard rationalist approach of first defining goals ...Instead of R & D, strategy should be based at least in part on the converse approach. (p. 129)

A final suggestion concerns itself with the roles of professional organizations in education including those involved in collective bargaining.

Teacher organizations need to take a more active part in the development of strategies for the improvement of education. As long as the research is carried out primarily by universities and research establishments for teachers, instead of with teachers, it is likely to continue to receive the lukewarm reception it has received in the past. This imposition of new methods as a contrivance of management to exploit the already oppressed teacher. Involvement of the teacher requires more than an obligatory single planning-period per week. It is time to persuade teacher's organizations to bargain for the adoption of educational programs along with salary increases. In addition, given the increasing number of school strikes, research is needed to identify successful political strategies capable of resolving legitimate differences of opinion without resorting to strikes.

By the year 2,000, despite any or all of these efforts, education may yet be no further in its understanding of the teaching-learning process and in its search for increased productivity. Issues seem to gain in complexity even as new discoveries are made. A quote, attributed to Robert Stake, is offered as a concluding observation.

> A century ago, a Swiss historian, Jacob Burckhardt, forsaw that ours would be the age of the great simplifiers, and that the essence of tyranny was the denial of complexity. He was right. This is the single greatest temptation of the time. It is the greatest corrupter and must be resisted with purpose and with energy. (Lessinger and Kyler, 1971, p. 62)

In our search for increased productivity, I would hope that we don't ignore the complexity of the issue.

REFERENCES

Barro, Stephen M. An Approach to Developing Accountability Measures for Public Schools in Accountability for Teachers and School Administrators. Belmont, California: Fearon Publishers, 1973.

Boulding, Kenneth "The Schooling Industry as a Possibly Pathological Section of the American Economy." Review of Educational Research 42 (Winter 1972): 129-143.

Bowen, Howard R. Can Higher Education Become More Efficient? Educational Record 53 (Summer 1972): 191-200.

Buchmiller, Archie A. "Increased Productivity: A Potential Response to High Public Service Costs." Madison, Wisconsin: Department of Public Instruction, Vol. 4, No. 2, 1974.

Buchmiller, Archie A. "An Overview of Productivity in Government and the Public Services." Madison, Wisconsin: Department of Public Instruction. February 1975.

Callahan, Raymond. Education and the Cult of Efficiency. Chicago: University of Chicago Press, 1962.

Carlson, R. O. Change Processes in the Public Schools. Eugene, Oregon: University of Oregon, 1965.

Conant, Eaton. Teacher and Paraprofessional Work Productivity. Lexington, Massachusetts: D. C. Heath and Co., 1973.

Consumer's Union. "Consumer's Union for Education Can Tell You When Your District is Being Gypped." American School Board Journal 162 (January 1975): 38-40.

Dwyer, Henry S. "Toward Objective Criteria Professional Accountability in Schools" in Accountability for Teachers and School Administrators. Belmont, California: Fearon Publishers, 1973. pp. 40

The Fleischman Report: On the Quality, Cost, and Financing of Elementary and Secondary Education in New York State. New York: The Viking Press, 1973.

Ginzberg, Eli; Kuhn, James W.; and Reubens, Beatrice G. "Private and Public Manpower Policies to Stimulate Productivity." Washington, D. C.: Conservation of Human Resources Project, June 1971.

Grieder, Calvin. Accountability: "We Can Measure Just So Much." Nation's Schools 89 (June 1972): 10

Hackman, J. Richard "Is Job Enrichment a Fad?" Harvard Business Review 53:5 September-October 1975: pp. 130-138.

Hatry, Harry P. and Fisk, Donald M. "Improving Productivity and Productivity Measurement in Local Governments." Washington: The Urban Institute, 1971. Prepared for the National Commission on Productivity.

Haubrich, Vernon F. "Business, Industry, and Schools." Educational Leadership 32 (April 1975): 435-436.

Henry, David D. "Accountability: To Whom, For What, By What Means." Educational Record 53 (Fall 1972): 287-292.

Herzberg, Frederick. Work and the Motivation of Man. New York: World Publishing Co., 1966.

Hostrop, R. W.; Mecklenburger, J. A.; and Wilson, J. A. Accountability for Educational Results. Hamden, Connecticut: Linnet Books, 1973.

House, Ernest H. "The Price of Productivity: Who Pays?" Today's Education 62 (September/October 1973): 65-69.

Jones, Philip G. "How One School Board Judges, Rewards - and Penalizes its Superintendent on the Basis of His Performance." American School Board Journal 161 (February 1974): 32-36.

Kauffman, James M. et. al. "Teaching/Learning: Quantitative and Functional Analysis of Educational Performance." Journal of Special Education 7 (No. 3, 1973): 261-268.

Knezevich, Steven J., ed. Creating Appraisal and Accountability Systems. San Francisco: New Direction for Education, Jossey-Bask, Inc., 1973.

Kite, Robert H. and Steckler, Ann. "A Cost Analysis Strategy for Education." Educational Technology 14 (July 1974): 49-54.

Lessinger, Leon and Kyler, Ralph eds., Accountability in Education. Worthington, Ohio: Charles A. Jones Publishing Co., 1971.

Luke, Robert A. "Matching the Individual to the Organization" Harvard Business Review 53 (May/June 1975): 3

Lukitsh, Robert A. and Sesskin, Samuel H. "Community College Built Itself a Cost Analysis System Based on Experience." College and University Business 55 (December 1973): 26-27.

McNamera, James F. "Mathematical Programming Models in Educational Planning." Review of Educational Research 41 (December 1971): 419-446.

Mark, Jerome A. and Stein, Herbert. The Meaning and Measurement of Productivity Washington: The Bureau of Labor Statistics, 1971. Prepared for the National Commission on Productivity.

Moore, A. A., Jr. "Potential of Efficiency" Compact 8 (November 1974): 24

National Commission on Productivity. Conference on an Agenda for Economic Research on Productivity. April 1973.

National Commission on Productivity. First Annual Report, March 1972.

National Commission on Productivity and Work Quality. Employee Incentives to Improve State and Local Government Productivity. March 1975.

Newkirk, Nate "Innovation in Teaching: Why Industry Leads the Way" in Accountability for Educational Results. Hamden, Connecticut: Linnet Books, 1973.

Ornstin, Allan C., ed. Accountability for Teachers and School Administrators. Belmont, California: Fearon Publishers, 1973.

Pincus, John "Incentives for Innovation in the Public Schools." Review of Educational Research 44 (Winter 1974): 113-144.

Porter, John W. "What Are We Getting for Our Tax Dollars?" Compact 8 (November 1973): 19-21.

Priest, B. J. "Increasing Productivity," a memo from the Chancellor. Community and Junior College Journal 45 (April 1975): 20-21.

RANN (Research Applied to National Needs). "Energy, Environment, Productivity." Proceedings of the First Symposium on RANN. Washington: National Science Foundation, pp. 139-142, 1973.

Ricketts, K. E. "Accountability Starts with the Superintendent." Phi Delta Kappan 55 (September 1973): 70-73.

Schultz, Theodore. "Education and Productivity." Washington: National Commission on Productivity, 1971.

Sciara, Frank; Jantz, Richard K. Accountability in American Education. Boston: Allyn & Bacon, 1972.

Selden, David. "Productivity - Yes, Accountability - No" in Accountability for Teachers and School Administrators. Belmont, California: Fearon Publishers, 1973. pp. 21-24.

Selden, Stephen and Apple, Michael W. "What May a 75-Year Involvement With the Language and Ideology of Business Tell Us?" Educational Leadership 32 (April 1975): 452-456.

Solomon, Lewis C. "Meeting Demands for Increased Academic Productivity." Educational Record 54 (Summer 1973): 198-203.

Stiles, Lindley J. "Policy and Perspective - Matching Expectations with Productivity." Journal of Educational Research 68 (November 1974): 1.

Turney, David. "The Accountability Dilemmas." Contemporary Education 46 (Fall 1974): 71-72.

Weiss, Edmund H. "Should Schools Get a Bigger Bang for Their Buck?" School Management 18 (November 1974): 18-21.

Windham, Douglas M. "The Efficiency/Equity Quandry and Higher Educational Finance." Review of Educational Research 42 (Fall 1972): 541-560.

Witmer, David R. "Cost Studies in Higher Education: Review of Educational Research 42 (Winter 1972): 99-128.

Wortman, Wilfred W. "Productivity and Professors: or How to Cut the Real Costs of a Successful Education." College and University Business 55 (December 1973): 23-24.

Wynne, Edward. The Policies of School Accountability. Berkeley, California: McCutchan Publishing Co., 1972.

ED126568

INCREASING PRODUCTIVITY IN EDUCATION:

A FEW SEMINAL IDEAS

By

Leon M. Lessinger

EA008510

Not so long ago the subject of productivity in education would have elicited few sparks, little controversy and great disinterest on the part of both professional educators and lay citizens. All of that is changed. Today the subject stands at stage center. Why?

The answer is not difficult; it focuses upon the growth of government and the costs of sustaining that growth.

The Growth of Government

Since the 1930's, the cost trends for government at local, state and federal levels have been sharply and inexorably upward. The picture provided by the federal level alone is dramatic. It took the first 186 years of our national existence to reach a one hundred billion dollar national budget. We reached the second hundred billion dollar budget in nine years and the third in just four. Put on a graph, such growth is termed exponential.

Professor Dennis Gabor, of the Imperial College of Science and Technology in London, has written some sobering thoughts regarding exponential curves. ". . . exponential curves grow to infinity only in mathematics. In the physical world they either turn round and saturate, or they break down catastrophically."

Exponential curves are abstract; paying taxes is not. Presently well over a third of the nation's output goes into the hands of the tax collector. If present trends continue, this will double in just twenty-five years.

Will present trends continue? Most assuredly yes! If anything, the pressure to continue the sharp and relentlessly upward cost of government will probably increase. Who can deny the obvious needs and the frustrating challenges? Never have we as a nation been so forced to find our way through problems of such number, scale, complexity and strategic importance as now. Shall I list a few--pollution, transportation, crime, housing.

We have the problems. What is more important is that more and more of our people see government as having the prime responsibility for solving them.

Currently, as a nation, we are struggling to overcome the most devastating economic slump since the depression of the thirties. Despite our penchant for government as the solver of problems, given the pressures of inflation and the relative stagnation of the economy, further increases in the levels of taxation are being bitterly contested and are politically hazardous. This has already been shown in those areas where people can more directly control the levels of taxation. Following World War II, the normal pattern of voters in our country in state and municipal elections was to approve 75% of all proposed bond issues and to reject 25%. Since 1968 these percentages are being very nearly reversed. And this is happening at the very time when all of us seem bent to complaining about crowded hospitals, polluted air, unsafe streets, and inadequate schools.

The Increasing Education Costs

Education is one of the major cost centers of government. The dollar cost for American education since World War II follows an exponential-like curve. In 1950 we spent 10 billion dollars. By 1965 costs had reached 40 billion dollars. In 1975 expenditures will top 108 billion dollars.

As we hold this conference on increasing productivity in education, many school systems in our country are on the edge of insolvency. To open this fall, public school systems laid off thousands of teachers and closed hundreds of elementary and secondary schools. A veritable rash of strikes has accompanied this turn of events. The situation in Chicago is representative of many of our larger systems. Chicago's budget on school opening called for laying off 1,781 teachers, cutting principal's salaries by 20% and removing three days from the length of the school year. Chicago had a deficit

of 16 million dollars, a figure that the San Francisco school district will match and Philadelphia's will exceed.

A similar situation exists in private school systems and at the higher education level. All this is occuring when there are fewer students in school and there is widespread concern both with the quality of the achievement of learners and the value of a college education.

What led to this situation in education?

There are four principal reasons for the rise in the costs of education: inflation, improved salaries for personnel, lower pupil-teacher ratios and more students attending school for longer periods of time.

Little can be done about the problem of inflationary rises by a subsystem such as education. The other three may be usefully elaborated because they do bear on the arguments to be presented shortly.

The rise in the number of students attending **and** completing the public schooling process is one of the success stories of American education. Approximately one-fourth of the rise in the costs of education at elementary and secondary levels may be attributed to this cause. Currently, enrollments are declining at the elementary level. It is expected that secondary enrollments will stabilize over the next decade. This factor then is unlikely to continue to be a factor for upward pressure. It is, however, a major reason for concern about rising costs.

The twin factors of lower pupil-teacher ratios and increased salary and fringe benefits will continue to be the major causes of rising costs. An examination of the salary and fringe benefits area is enlightening.

Salary and fringe benefits for teachers and other instructional staff have risen faster than overall salary increases for a composite of all other salaried workers. During the period 1957-1971, for example, school personnel ranged from 110% to 120% of the averages of earnings for full-time employees

in all other industries. Had the rate of these increases been the same as the average increase for all other wages, school expenditures would have been 3.3 billion or 8% less in 1970-71.

There are some disturbing practices in the present pattern of dispersing funds for personnel. One of the most consistent findings in the research literature is that perhaps the most important school input is, or is highly correlated with, the teacher's verbal intelligence. However the scarcity of this resource is in no way reflected in teachers' salary scales. For the most part, these schedules consist of two variables, time served and college credits. Generally the schedule has ten rows and five columns. A teacher enters the first cell with an AB and 0 experience. At this point, he or she is paid $x. Then years and 60 credits beyond the AB degree later, the teacher will make $2x.

Analysis reveals that teaching experience and graduate education contribute little to improvements in student performance. What is worse, the characteristics of teachers that do seem to matter are not highly correlated with either experience or additional college courses. Yet these attributes are being purchased by virtually every school district.

Another disturbing general finding in the research has to do with the student to teacher ratio. As we have seen, this factor, along with salaries and fringe benefits accounts for the largest increases. Yet the evidence indicates the student to teacher ratio bears little relation to student performance.

In the last decade, the average salaries paid teachers have risen 86%. Given both powerful organization, political astuteness and aggressiveness, pressures for a continuation of this trend will probably not be contained. What can be done then to improve the situation?

Increasing Educational Efficiency

It is obvious that we in education shall have to work along three definite and interrelated lines:

(1) to obtain the same results for less cost;

(2) to obtain better results for the same cost; and/or

(3) to obtain significantly better results for costs in excess of those that merely reflect inflation.

In short, we shall have to increase our productivity.

Getting the same results for less cost requires increasing the efficiency of an educational process. There are two basic approaches to increasing efficiency: one is planned and rational, the other is unplanned and reactive. The first reflects good management; the second is best described as "meat-axe budget control."

Given the many primitive management systems in education, the present political realities and economic conditions, it is no surprise that we are witnessing the implementation of the meat-axe approach. This is evident in the widespread lay-off of personnel, the curtailment of the time for learning, the elimination of certain educational experiences, and the cutting down of administrative control. This approach staves off fiscal disaster, but it does not solve the problems.

A wiser and more lasting approach to the challenge of efficiency requires the adaptation, adoption, and installation of appropriate management strategies and tactics. A discussion of those management strategies and tactics is beyond the scope of this paper. Recent experimentation with adaptations of Management By Objectives, Program Planning and Budgeting Systems and even Zero-Based Budgeting have shown promise and need more intensive implementation.

Improving the Effectiveness of Education Systems

The most promising approach at this time to increasing productivity probably resides in attempts to improve the effectiveness of the educational system, i.e., to try to get better results for steadily increasing costs. It is to such strategies that I now turn.

All attempts at improving effectiveness center upon the production of an ideal state, and this in turn requires widescale introduction of a systems approach to education.

In education an ideal state occurs when each student achieves every objective. Effectiveness is the ratio of the actual number of objectives achieved by the students divided by the total number they would have achieved if each student had successfully mastered every objective.

System thinking provides the conceptual framework within which the pursuit of the ideal state becomes feasible.

Viewing schooling as a system enables us to:

(1) clarify, specify, codify and communicate our educational purposes, missions and objectives;

(2) measure the achievement of this output:

(3) construct optimal learning situations; and

(4) transform typical teacher performance into "teacher-artist" performance to harness affect to the educational process.

For the educational planner, the concept of system is indispensible.

A system is a group of components which has been integrated or coordinated to accomplish a purpose. The idea of system is a general one. There are, for example, transportation systems, energy systems and legal systems. In the human body there is a reproductive system, a digestive system and an olfactory system. There are three main ideas which are included in the system concept which give it its intellectual power and which

commend it to those seeking improved productivity. These are the ideas of purpose, coordination and interaction.

All enterprises are systems which require people, resources and a basic idea of what the enterprise is trying to accomplish. That attempted accomplishment is its purpose. For education that purpose is learning.

Learning can only be inferred through observing a change in the behavior of the learner. That change in behavior is a product of experience--generally an experience with a teacher. The "business" of an educational enterprise in pursuit of its purpose is the supply and orchestration of experience--of a type I call productive experience because it is thought likely to cause the achievement of an ideal state--the accomplishment by all the students of each of the objectives.

I can describe three basic kinds of experience which teachers (with administrative support) can supply, orchestrate, and/or be. I call these basic experiences: training experiences, educative experiences and celebrative experiences. Training experiences yield prescribed knowledges and skills. Educative experiences are reflextive, giving birth to insights, and appreciations. Celebrative experiences are bathed in affect: the feeling of joy, of awe, of thanksgiving.

Training Experiences

The training experience replicates or simulates a known job situation to reliably produce in the learner the capability of performing the job tasks. Each task can be described by one or more behavioral objectives, and each behavioral objective is made up of certain knowledges and skills which may be written as enabling objectives.

Training refers to instruction to enable people to perform in desired ways in specific situations.

An auto mechanic is trained to adjust a carburetor in a shop. A physician is trained to remove an appendix in a hospital. A teacher is trained to construct an objective test in a classroom. A lawyer is trained to argue a case in a courtroom.

It may seem surprising to see a linking of such high-status professions as law, medicine and teaching with a modest status program of auto mechanic. Both professional education and vocational education are concerned with preparing people for occupations.

The words occupation and job bear further analysis. Both refer to activities with specific ends, and often, specific means. Students in hospitals, stores, classrooms, laboratories and shops may be said to be involved in an educational occupation, involving certain recurring jobs. A similar analogy can be drawn for athletics and games.

Each teacher has five major tasks to perform or to orchestrate in carrying out a training experience:

(1) to define and to communicate the objectives of the experience;

(2) to develop and employ instruments such as tests to measure the actual achievement of the objectives by each student;

(3) to use the principles of learning and known good practice, both as a guide to the construction of the experience and in its presentation;

(4) to use the evidence of the actual results of the training experience--the achievement of the students--as feedback for upgrading and revising the experience as needed; and

(5) to search out from time to time the adequacy of the connection between the training experience and the actual job it is designed to implement.

The teacher, in providing a training experience, is professionally accountable, i.e., he or she knows and uses what is established as good practice. Such professional accountability is the spur for increasing effectiveness. If the training experience, embodied as an instructional system, does not in fact yield the desired results, the teacher (and his or her support system) takes responsibility--but not blame--for positive remedial action. No one is blamed! Blaming is not a positive remedial action, whether or not that blame is assigned to the teacher, the student, the parents, socio-economic conditions or alleged malfunctions in students such as I.Q.s or variously-named disabilities. It is the instructional system's experience content that is on trial. If the system does not produce what is required, it is worked on until it does. If this means additional training, or better materials or sounder pre-requisite analysis or any other changes in the system, it is done.

The training experience can be quality-controlled. Through performance testing of the students by independent auditors, it can be quality-assured.

Educative Experiences

Unlike a training experience, an educative experience has no assured terminal performance objective. The outcomes of an educative experience are altered internal states known primarily to the student and properly called insights, appreciations, awarenesses, commitments and so forth. The closest analogy to an educative experience is a play in the theatre. The product of such an experience can be known only in transaction with another human being. The transaction can be oral, in writing, symbolic (as in painting) or in music or dance.

Three personal educative experiences demonstrate the "theater-quality" of these experiences.

The first example occurred when the author was a superintendent of schools. A board of education had established an artist-in-the-classroom program. I remember watching a sculptor in a fourth grade classroom fashioning a horse from a block of wood. As the animal emerged, the children swarmed over the artist literally extracting his "magic" from his shoulders and arms. I can still see him trying to free himself so that he could manipulate his tools.

It is obvious that the children were not able to carve as a result of this experience. Rather, they might better be described as aware of artistry, appreciative of the creative process, etc.

The second example occurred on a trip from the Buffalo airport to St. Bonaventure University. The driver, a college student born in New York City who had met the author at the airport, pointed to some cows in a field with the remark, "those were the first wild cows I had ever seen." When asked what he meant by "wild cows", he replied in a voice which showed surprise at the question. "Why, they are cows that aren't in a zoo."

Finally, I recall a vivid educative experience I had at age 17 as a mechanic apprentice trainee at an Air Force base. I had just cut too much off an expensive part--my first job. Concerned, I took it to my foreman, who, in reassuring tones, told me not to worry, but to get some "put-on" at the toolroom. He explained that this was a jelly-like substance that hardened into new steel which could be recut. With great joy, I went to the toolroom only to be told that there was a big demand for this and that they were out of it. Somewhere between the second toolroom and the third I had an educative experience.

Like the sculptor, and the wild cows, there was no skill or behavioral outcome. Rather it was an insight, an understanding of being tricked--an awareness of what the anthropologist classifies as a passage to maturity. Who is there, indeed, who has not had such an educative experience? Most everyone can recall searching for snipes, buckets of steam, left-handed monkey wrenches and sky hooks.

Those who would "stage" an educative experience can make use of the knowledge of the arts, particularly the performing arts of acting, dance and music. In the schools and colleges the heart of an educative experience is the teacher as a performer--perhaps even a performing artist.

The most vital element of an educative experience is the teacher as a performing artist. The contribution of the teacher to the efficiency and effectiveness of the learning process is directly related to his or her competence, confidence and caring. Each of these critical variables can be optimized through a transformational process embodied in "teaching as a performing art."

The approach is polyperceptual in nature and rests on certain powerful similarities between performing artists (and certain others, e.g., courtroom lawyers, ministers) and teachers:

1) Both have an audience. The teacher's role is different in one sense, however, in that the teacher functions not only in a teaching capacity, but also assumes a leadership role in order to promote student performance.

2) Both have a place to perform. In a very direct way, teaching spaces are as diverse as those created in the theatre.

3) Each has performance material which must be adapted for delivery or communication.

4) Each has a wide variety of ways in which to perform and a variety of styles and modes of performance.

5) Each has an instrument to be used. For the teacher that instrument is self--plus performance skills, costume, make-up, and performance materials.

There are training experiences already available for transforming people into persons who can perform such roles as: manager, home and community reinforcer, and instructional system designer. Competent in their disciplines and in critical foundation areas such as the psychology of learning, they can, through the pedagogy of the arts, be transformed systematically into performing artist-teachers, into people who can use and harness the emotions in the service of producing intended learning.

Celebrative Experiences

On the surface, it seems difficult to imagine that a teacher can supply, orchestrate or be a celebrative experience. The very word conjures up mystery. I am using the term to describe the sense of joy and thanksgiving that literally floods a person at particular times. The experience is intensely personal and yet it may sometimes be dramatically observed and is definitely "catching".

The celebrative experience may be seen at athletic events where at times players jump up and down, hug each other, sometimes fall to the knees in prayerful thanksgiving.

Such experiences are likely when odds are successfully overcome: it is the underdog who celebrates on victory; it is the winner of a championship who celebrates, the harder the victory to achieve the greater celebrative experience.

Such experiences are likely when risks are successfully met: the scaling of a difficult mountain, the successful operation on a difficult case, the rescue of a community when the odds are overwhelmingly negative.

Both training objectives and educative objectives can be verified. Both can be rated in terms of appropriateness and verisimilitude but only the training experience can reliably produce intended behavioral change.

The Instructional System

The heart of a school system is its instructional system. This is the sub-system whose purpose it is to realize one or more training or educative objectives. The sum of its intended objectives is its output. The product of its output and the number of its clients served in a unit time, is its ideal output. The ratio of the actual number of objectives attained by its clients, the actual output, to the ideal output represents the instructional system's effectiveness. Effectiveness has a social or societal referrent, therefore it has a point-in-time quality as judged by the dominant political group(s). The definition of quality as "fitness for use as seen by the user" is particularly appropriate.

Let us look more closely at an instructional system. It can be defined as an integrated or coordinated set of persons, methods, media and equipment efficiently performing the functions required to accomplish its ideal output.

What are these required functions? There are five: planning the experience, communicating its content, practicing knowledge and performance objectives, managing its clients, and controlling its quality.

Each of these functions presents opportunities for increasing productivity.

Planning the Experience

This function is made up of such activities as needs assessments, diagnoses, objectives specification and assembly of required materials and space.

Communicating the Content

A major function of an instructional system is to communicate knowledge, i.e., symbolic processes and symbols. Every task or performance presupposes the learning of some element of knowledge. This knowledge must be shared. The sharing may be done in a variety of ways. The most common are: talks, reading, films, television, graphic devices and tape recorders.

Opportunities exist to markedly increase the contribution of this function to the effectiveness of the output of the system. A well-organized, meaningful, properly-paced presentation, geared to the levels of the clients and augmented with appropriate media is merely one example of such an opportunity. There are also impressive ways to increase the efficiency of this function through technology.

Practicing the Knowledge and Performance Objectives

As we have seen, the purpose of the instructional system is represented in the performances to be mastered by the clients. These performances, in turn, are dependent upon various skill and knowledge components. For learning to occur, clients must practice the overall performance as well as its component elements. In the planning function, detailed descriptions of each task are used to develop the training and educative objectives. These detailed descriptions form the basis for the design of experiences

(situations). In the training situations, clients practice the tasks until they have mastered them. These training situtations may be replicas of what is present on-the-job or a variety of approaches to the real may be employed.

There is a direct relationship between presentation of content and its practice. Research results illustrate the dramatic ineffectiveness of presentations not associated with the practice of both performance and knowledge.

Managing the Clients

With some exceptions, learners generally require assistance in paying attention to what is being presented and to actively participate in the learning experience. A variety of approaches are available to improve the contribution of this function to the overall effectivesness of the system. Some of the major approaches are: (1) individualizing instruction, (2) providing incentives, (3) ensemble, and (4) application of behavior modification techniques. The most critical variable in this function is the professional role of the teacher. This will be more fully explored under the concept of transformation. (?where?)

Controlling the Quality

Every system must have some means of self-regulation to insure that it will achieve its purposes. Quality control is the function of the instructional system which assesses, feeds back results, and causes those revisions which help insure the accomplishment of whatever was intended. Quality can be defined as fitness for use as judged by the user. Control is an amalgam of two interrelated concepts: evaluation and accountability. Let us see how control operates.

For every objective which represents the purpose of the system, a performance or proxy is described which verifies its achievement. Evaluation is the process of comparing what was actually achieved to what was desired. Accountability in this context is the assignment of responsibility for detecting the gap between what was intended and what was achieved and doing those things known to close the gaps.

The quality control function is virtually unknown in American education. Coupled with certain transformations of the teacher's role it represents a most dramatic and powerful approach to major improvement in the productivity of education.

Summary

The cost of government at all levels has risen steadily and dramatically since World War II. Its level and direction now closely resemble that of an exponential curve.

Pressures to continue the level and direction and even to accelerate it grow stronger, while at the same time the economy and taxpayer resistance make accomodation to the pressures more and more unlikely. As the one element of government closest to direct taxpayer control, education is in deep crisis. Education must become more productive if only to maintain its present levels of operation.

Increasing productivity means: (1) getting the same results for less cost; (2) getting better results for the same cost; and (3) getting significantly better results for "real" increases in cost.

Getting the same results for less cost means increasing the efficiency of an educational system. There are significant ways this can be done, but given the political realities of the educational scene it is doubtful that

we shall approach efficiency in a rational way. Rather we are witnessing the meat-axe approach of lay-offs, "frills" elimination and school year cut-backs.

Getting better results for the same costs or significantly better results for "true" increases is a question of effectiveness. This too faces some harsh realities but there are some promising paths with some likelihood for progress.

Some promising ways to increase productivity through increasing school system effectiveness are represented in:

1) pursing ideal output through viewing schooling as a system with purposes, integrated functions and interrelationships with other systems.
2) contructing optimal learning situations by perfecting training, educative and celebrative experiences;
3) directly working for improved output through upgrading the derivation, specification and measurement of training and educative objectives; and
4) transforming conventional teacher performance to teacher-artist performance that harnesses the power of affect to the educational process.

ED126569

PRODUCTIVITY IN THE PRIVATE SECTOR AND ITS APPLICATION TO THE EDUCATIONAL ENTERPRISE

By

Fred C. Schwarz

EA 008 511

PREFACE

This article presents the present dilemma of productivity in the United States in the private sector and illustrates efforts to reverse the trend. Also presented are techniques being used by companies which are successful in improving their productivity. Finally, specific illustrations of techniques for improving productivity in the educational enterprise are covered.

THE PRODUCTIVITY DILEMMA IN THE UNITED STATES

For the first time in the history of our country we have ceased to lead the world in productivity gains. The following chart shows our position in comparison to the rest of the world.

AVERAGE ANNUAL INCREASE IN OUTPUT
PER MAN-HOUR IN MANUFACTURING, 1960-73

Figure 1

The U.S. National Commission on Productivity and Work Quality is struggling to provide assistance to the private sector and government agencies to change the undesirable trend in our rate of productivity. It is interesting to note that the Japanese Productivity Center, which was suggested by the U.S. State Department and assisted with $6.2 million American dollars, is five times larger than our national commission.

C. Jackson Grayson, dean of the Business School of Southern Methodist University, has proposed that the private sector establish a productivity center using non-government funds. Although the target date for opening in 1976 will be missed, I believe we will see such a center in the future.

INTRODUCTION

Traditionally the private sector has been concerned with productivity as the measurement to determine success or failure of the enterprise. The traditional definition has been the comparison between the quantity of goods produced or services provided, and the quantity of resources required to produce the products or services. The formula commonly used is simply output over input:

$$\frac{\text{OUTPUT}}{\text{INPUT}}$$

PRODUCTIVITY MEASURES USED IN INDUSTRY

The following are some measures of productivity used by Honeywell Inc. in various segments of the company:

MANUFACTURING	MARKETING
$\frac{\text{Factory \$ Output}}{\text{Total Mfg. Pay}}$	$\frac{\text{Sales}}{\text{Salesmen}}$
$\frac{\text{Products (weighted)}}{\text{Total Mfg. Employees}}$	$\frac{\text{Sales}}{\text{All Marketing Employees}}$

ENGINEERING	CONTROLLER
Designs (weighted) / Designers	Sales / Cont. Dept. Employees
Drawings (weighted) / Draftsmen	Accts. Receivable / Credit Employees
PERSONNEL	**GENERAL MANAGEMENT**
Total Employees / Personnel Employees	Sales / Employees
Total Pay / Pers. Dept. Pay	Profits / Employees

Prior to the 20th century proponents of scientific management concentrated on better methods and processes developed by industrial engineers and on better machines. Early pioneers in scientific managment were Frederick Taylor, Henri Fayol, Frank and Dr. Lillian Gilbreth. They developed such techniques as time study, work-place layout, motion analysis, flow process charting, systems analysis, gang charting.

It wasn't until the 20th century that studies determined the influence of the human factor in the input part of the productivity equation.

The committee on Industrial Illumination was formed in 1924 by the National Research Council under the honorary chairmanship of Thomas A. Edison. Many prominent physicits, physiologists, ophthalmologists, and electrical engineers were represented on this committee which investigated the effects of improved factory lighting on production.

A series of pilot experiments were designed and carried out. Everything went according to plan at first. When illumination was made stronger for a test group at the Hawthorne Works of the Western Electric Company, production increased. The surprise came when illumination was lowered to its original strength; instead of dropping back, production continued to climb.

When two groups were used in the test and only one was given the benefit of increased illumination, production in both groups continued to climb. A similar increase was observed in a relay assembly group when rest pauses were introduced and later removed. Control groups which experience no changes in hours of work, illumination or rest showed production increases also.

Production continued to climb despite adverse physical conditions. Employees had developed a great deal of satisfaction from being able to communicate their ideas to management in the course of the experiments. They felt that they had a voice in decisions concerning themselves.[1]

Discovery of the importance of the human element in productivity led to the creation of a new field of psychological research called organizational psychology.

MOTIVATION TO WORK AND THE EFFECT ON PRODUCTIVITY

The "human relations" theorists of the 1930's assumed that happy workers were more productive workers. This was disproved through research studies.

Since the 1930's, organizational psychologists have conducted numerous studies to determine what factors motivate people to work. Following are some conclusions concerning factors which affect motivation to work in the private sector:

"There was no systematic relationship between productivity and such morale variables as intrinsic job satisfaction, financial and job status satisfaction, and satisfaction with the company."[2]

Productivity depends upon many factors other than employee attitudes. A productive worker may indicate more dissatisfaction with his job because he is interested and involved.

Productivity of a work group may be influenced by how the members feel about the group and the level of group goals.

Dissatisfaction with work as reflected in absenteeism and quitting also affects productivity.

Rensis Likert, director of the University of Michigan Survey Research Center proposes that the combination of high productivity with low satisfaction may be difficult to maintain over a long period of time, because the combination may deteriorate the human resources of the organization.

THE EFFECTS OF DIFFERENT STYLES OF LEADERSHIP SUPERVISION ON PRODUCTIVITY

"The effective foreman (railroad and insurance company study) was able to differentiate his role from the non-supervisory employee. Compared to less successful supervisors he spent more time planning the work, more time performing highly skilled tasks and more time in actual supervision. Non-punitive behavior was more characteristic of foremen of high-producing section than of low-producing sections. A concern with penalties rather than remedies, and with the assignment of personal blame rather than the discovery of causes for mistakes, appeared to characterize the low-producing units.

"The most successful supervisors in this scheme are those who combine employee-centered and production-centered qualities, working out their own creative way of synthesizing these two concerns. We can also discover supervisors who are interested in the employees and sensitive to their needs, but neglectful of even disinterested in the production goals of the organization."[3]

THE NEW WORK FORCE

There is a possible connnection between the characteristics of the new work force and our declining rate of producctivity in the United States.

People born after World War II appear to respond to social stress more readily than to economic stress. "Evident in hindsight as early as 1950, this change was caused by affluence, by political concern for human security and human rights, and by increased communication, primarily television, which directly or indirectly urges people to enjoy themselves and to lead a better life."[4]

William Glasser claims that the foregoing influences have changed the attitude of our new work force from a goal-oriented philosophy to one of first rate determination then goal consideration. He states, "Less anxious about fulfilling goals to obtain security within the power hierarchy, people today concern themselves more and more with an independent role -- their identity"[5]

Glasser's contention is that our present work force is concerned with involvement and cooperation. Their interest in role identity first and goals second may account for less emphasis on productivity.

UNIONS AND PRODUCTIVITY

Unions have been opposed to productivity improvements which jeopardized jobs in the private sector. They have been willing to accept increases in wages where productivty improvements have been made by machines and better methods, which in most cases were due to management effortss. There is now a trend -- in light of the declining rate of productivity in this country -- to examine productivity improvements more cooperatively.

Bertram McNamara, director, District 32 of the United Steel Workers of America, in a speech at the University of Wisconsin on November 19, 1975,

made these remarks: "I intend to discuss productivity this morning in its relation to collective bargaining and to draw on the joint experiences of the union and management in the steel industry as they seek new solutions to common problems. Problems which either directly or indirectly affect productivity and which, if not resolved, could have an adverse impact on profits, job opportunities and wages in many segments of the industry.

"I also want to briefly discuss with you the steel industry - steel workers union joint productivity program, the first formal attempt by labor and management to cooperate together to improve productivity on an industry-wide basis.

"May I say, in conclusion, that in my career as a union officer, one which spans the entire growth of industrial unionism in the United States, I have witnessed tremendous improvements in labor-management relations. As I look at the problems we face as the leading industrial nation in this troubled world, problems most of which have an economic origin, it is my conviction that we must move further and faster down the road to mutual cooperation if we are to survive as a free industrial society in the years ahead."

A recent development in Wisconsin is a contract in which employees share in the savings developed to improve productivity. The following excerpt from the contract indicates the amount of savings to be shared. "If the BLS Consumer Price Index-National Series (1967 = 100) increases less than 8% for the base periods described below, employees shall receive 25% of the savings for wage increases built into the base wage rate. If the BLS CPI increases 8% or more, 50% of the savings will be set aside for wage increases. No more than a sum equal to a 3% wage increase may be built into the base salary during any six (6) month period. However, employees shall be entitled to all increases as a result of all designated savings."

EXAMPLES OF ACTIONS IN THE PRIVATE SECTOR TO IMPROVE PRODUCTIVITY

Productivity Program at General Electric Company

"Management Must Take Some of the Blame"

To get the opinions of management and front-line supervisors, three simple questions were asked about the reasons for poor performance. (This is a composite study of managers and foremen in many different plants.)

Reasons for Poor Productivity	High-level Managers	Front-Line Supervisors, Shop Supervisors, General Foremen, etc.
Worker Motivation	1	3
Supervisory Approach	2	2
Interferences	3	1

> Managers believed the worker at fault for not being more productive. . . he lacked motivation. They agreed that the Supervisory Approach, i.e. better trained formen in managerial techniques and human relations, was important. Interference was the least important cause for low productivity in the eyes of the managers. The front-line supervisors, closest to the action, had exactly the opposite view of the problem. Motivation was least important in their eyes and Interference the most important. They shared with managers a need for a trained Supervisory Approach.

Further investigations proved the front-line supervisors right and the managers wrong. A week-long study of the reasons for idleness in a shop producing electro-mechanical equipment showed:

Reason for Idleness	Hours lost	Equivalent in Number of Workers
Disruption of Material Flow	335	8 1/2
Tool and Equipment Problem	275	7
Quality Problems	80	2
Needed Information Lacking	18	1/2

If you estimate the worker's hourly rate of $20.00 (labor and burden), that's almost $700,000 per year down the drain."[6]

'We've gone to team assembly. Tried individual assembly but operators didn't like it. Finally concluded that operators didn't like to work alone, they like to socialize. We now have circular assembly tables. . . takes more space, which we have. . . six people are at a table with the last person doing the testing. If the assembly is faulty it's sent through again and each person checks his work. At first many assemblies went through again for corrective action and the workers complained because they had to check their work only to find the eror was someone else's. Today no one wants to appear as a sloppy worker and be responsible for sending the assembly through again. Our quality is almost perfect. We're sold on this team activity and are installing it on other non-assembly operations."[7]

PRODUCTIVITY PROGRAM AT HONEYWELL INC.

PRODUCTIVITY IMPROVEMENT
. . . What Can I Do?

As a supervisor you hold the key to improved productivity. How well you manage your human resources, your capital resources, and the technology you have to work with determines your productivity contribution to the organization.

Increased productivity and increased production are not the same thing. Increased production is sometimes obtained inefficiently. Increased productivity means more output for every unit of input. It is an organized approach to getting the best return on your investment in people, materials, equipment, and purchased services.

What can you as a supervisor do about improving productivity???

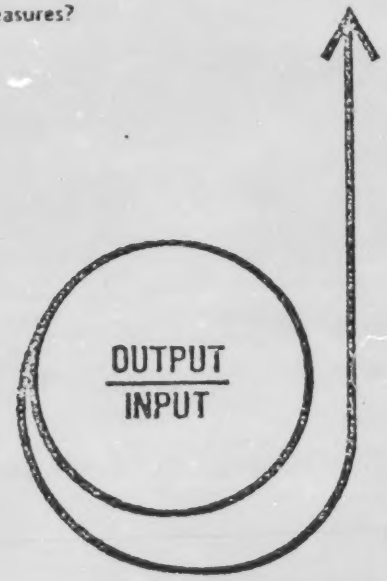
On the following pages are 10 key points to get you started.

1 DEFINE PRODUCTIVITY IN YOUR OWN AREA

Productivity is $\frac{\text{OUTPUT}}{\text{INPUT}}$.

It is a measure of the efficiency with which you use your resources to generate output.

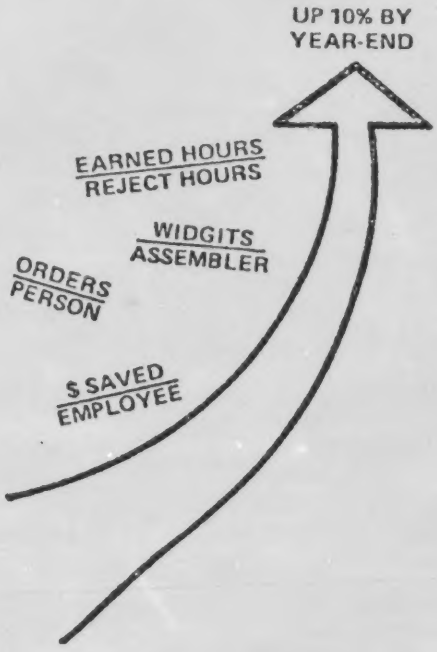
What are your productivity measures?



2

2 SET GOALS

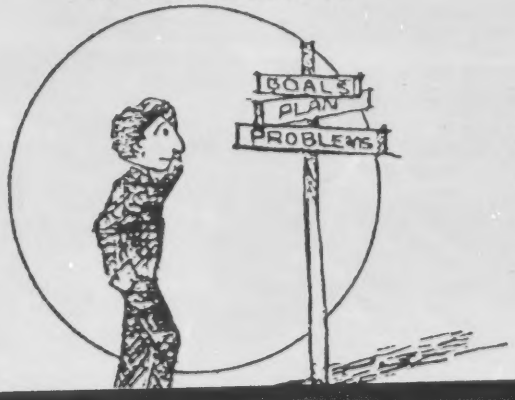
Once you have decided upon the $\frac{\text{OUTPUT}}{\text{INPUT}}$ ratios which best fit your work, set improvement targets for the next week, month, or year.



3

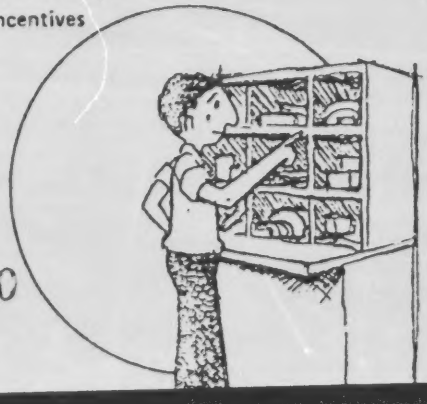
3 PLAN FOR IMPROVEMENT

1. Clarify Goals
2. Estimate Resources
3. Devise Possible Paths
4. Predict Problems
5. Select Best Path
6. Build Total Plan
7. Implement Productivity Improvements
8. Monitor Progress
9. Critique and Follow-up
10. MAKE IT HAPPEN!!!

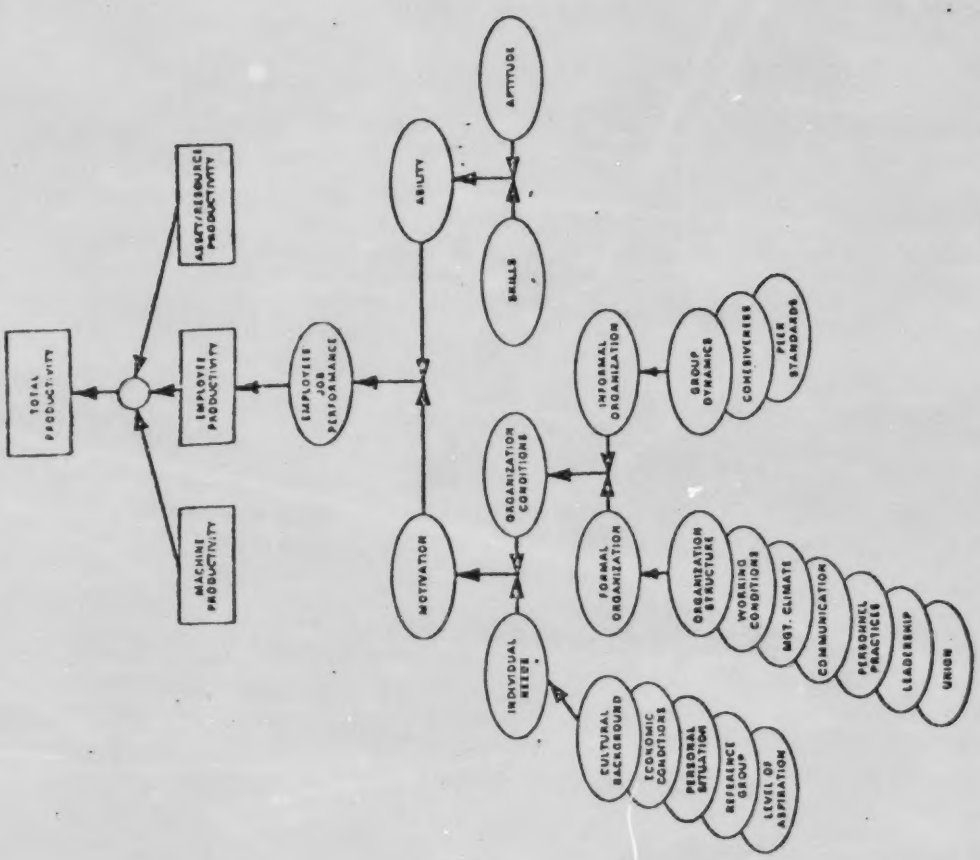


4 USE THE TOOLS YOU HAVE

- Effective Supervision
- Automation
- Work Simplification
- Work Measurement
- Job Enlargement
- Job Redesign
- Systems Analysis
- Standardization
- Training
- Upgrading
- Selection Systems
- Incentives



PAY SPECIAL ATTENTION TO PEOPLE



6

PEOPLE ARE THE KEY FACTOR IN BOTH OUTPUT AND INPUT.

5

7

CHALLENGE ALL TASKS

5

1. What Is It?
2. Why Do It At All?
3. Who Should Do It?
4. Where Should It Be Done?
5. When Is It To Be Done?
6. How Should It Be Done?

MAKE PRODUCTIVE USE OF YOUR TIME

7

1. List goals and set priorities: A, B, C.
2. Make a daily "TO DO" list.
3. Start with A's, not with C's.
4. Regularly ask yourself: What is the best use of my time right now?
5. Handle each piece of paper only once.
6. DO IT NOW!

8 ACCEPT THE COMMUNICATIONS CHALLENGE

I. The Problem:

Every organization ought to become more productive — get out more and better work at the lowest possible cost.

II. Today's Solution:

Shoot for employee cooperation, participation, and awareness that productivity is important and they can help raise it.

III. Techniques:

A. Appeal to individual's pride in his own work.
B. Use small group meetings to instill a feeling of teamwork and mutual responsibility.
C. Improve written communications: Quality and frequency.
D. Reward good producers.
E. Communicate more about "Why" things are done.
F. Conduct skills training.
G. Start Suggestion Campaigns:
   1. Improved methods
   2. Safety suggestions
   3. Productivity ideas.
H. Give progress "Feedback."
I. Set up special training classes.

IV. What to Watch Out For:

A. Employees may resent emphasis on productivity without tie-in to self interest.
B. Some communications backfire because they are just plain silly. Best insurance: Have several staffers critically review what you plan to write or say.
C. Use discretion during periods of layoff or reduction in force. Timing can make the difference.
D. Increasing productivity by cutting down on employee benefits will backfire.
E. When programs are applied only in limited areas of the organization, this may create a dilemma.
F. Communications alone can't do the job. Communication programs must coordinate with other line and staff efforts to change work habits and attitudes of not only the employees, but managers and staffers too.

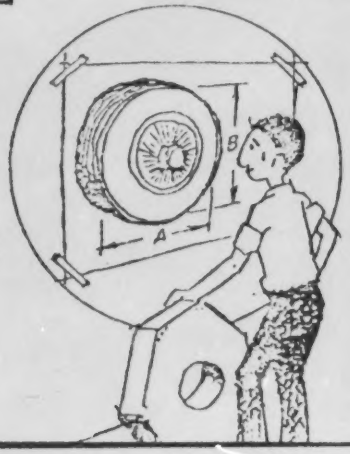
10 11

9 TAKE A LOOK AT JOB DESIGN

Design jobs so that people have:

- More control over their work
- More "ownership" over jobs
- More responsibility and risk-taking
- More of an effect on the outcome of their projects
- More complete and total jobs

.... the payoff is PRODUCTIVITY!!!

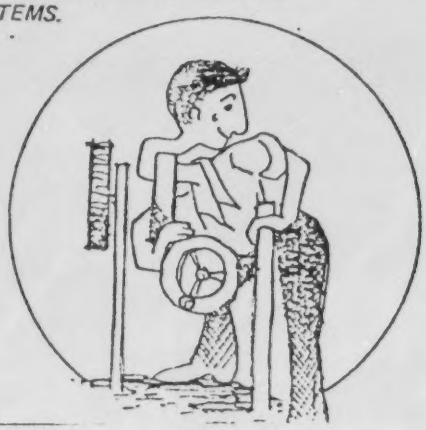


10 IMPROVE SYSTEMS

A management system is effective when the people influenced by it:

- Understand its purpose
- Agree with its aims
- Know how to use it
- Can influence its revision
- Receive timely feedback from it.

WHEN PEOPLE FEEL THEY BELONG TO AN ORGANIZATION, THEY TEND TO SUPPORT ITS SYSTEMS.



The American Management Association made a survey in 1974 to determine the role of executives in productivity of organizations in the private sector. It is my opinion that the greatest improvements in effectivess in the educational enterprise will be made through improved administration. The summary of the findings which follows has implications for administrators in the educational enterprise.

--Productivity: getting work done.
--Executives: presidents, top-level managers, middle managers.
--Managers: top-level managers, middle managers

When it is relevant to point out differences in the opinions of presidents and managers, this report will do so. However, for the most part the generic term "executive" will be used when referring to the survey respondents.

Some of the survey findings are:

--Executives feel that productivity problems occur most often in nonmanagerial areas of organizations: production, clerical, supervisory.

--However, executives say that the two most critical causes of such problems are lack of well-defined goals and objectives and inadequate managerial leadership.

--Ninety-six percent of the survey respondents believe that improved productivity in all personnel areas would help accomplish organizational goals such as improvement in profit, return on investment, product quality, or ability to attract capital.

--Sixty-three percent of the respondents say that executive productivity is a "serious concern" in the operation of business and industry today.

--Executives say that executive productivity is being hampered by inadequate, ineffective in-house management development programs; different work attitudes and values of younger managers; time required to deal with consumer groups, government regulations, and the like.

--Managers and presidents differ sharply in their opinions on the degree to which "office politics" and "red tape" adversely affect executive productivity. Twenty-four percent of presidents and 44 % of managers say that office politics are detrimental to executive productivity; 18% of presidents and 40% of all managers call excessive organizational red tape a factor significantly affecting executive productivity.

--Only 36% of the survey respondents work in organizations that have made some "special effort" to evaluate executive productivity in the last three years.

--Over half of the managers and one-third of the presidents claim that "middle management malaise" is adversely affecting managerial performance.

--Presidents and managers feel that security items such as higher salaries, better benefits, and better working conditions are not likely to improve the quality of managerial performance. Presidents and managers give almost five times as much weight to the following low-security, high-responsibility factors:

More meaningful and challenging managerial work.
More effective management control methods in the areas of budgeting, personnel relations, information flow, and the like.
Better management-education programs to improve managerial competence.
Financial incentive programs for managers at all levels.
Greater dissemination down the line of information pertaining to executive-level decisions and the reasons for them.
Increased organizational decentralization wherever possible so as to delegate more responsibility and authority down the line.
Better approaches to managerial performance appraisal.

Several of the implications suggested by the survey results are:

--Corporate and departmental goals and objectives must be more clearly defined and understood.

--Goal setting should be "interactive;" management at all levels of the corporate structure should be involved in the process.

--Nonmanagerial productivity cannot be divorced from the productivity of the managerial sector.

--Executive productivity will not improve unless and until executives at all levels have the opportunity to grow and flourish in their work situations.

--Management training and development programs must be improved; some of the programs in operation now are actively harmful to productivity.

--Presidents and managers differ somewhat in how they see the problems of executive productivity. Improved intracompany communications are required to minimize the detrimental effects of this difference.

It is clear from the survey results that executives are ready to initiate action and to make commitments toward improving their own productivity. The answers to what to do and how to do it are emerging. Executives say that greater responsibility acquired through interactive goal setting and greater authority established through improved communications would make a sound beginning.

But it is also clear that improved executive productivity will be proportionate to:

--the extent to which individual American companies become more committed to improved exectuve productivity within their own organization's ranks;

--the extent to which management training personnel and management educators examine and/or alter their methods and assumptions; and

---the extent to which individual executives improve their own capacity to do their work.

A return to less productivity is no longer a live possibility. Improved capacity to accomplish work--with individual self-respect intact--is required of all workers today. It is especially required of the executive. It will not be easy to measure or to accomplish an improvement in executive productivity. But the task must be done, and it must begin now.[9]

THE ROLE OF RESEARCH IN THE PRIVATE SECTOR AND IT'S EFFECT ON PRODUCTIVITY

Research and development in the private sector includes both invention and innovation. Invention is interpreted to occur when something new is conceived. Innovation is described as the process by which an idea or invention is translated into the economy. There is a significant relationship between innovation and economic progress.[10]

In a report by the U.S. Department of Commerce in January of 1967 on "Technological Innovation: Its Environment and Management", they cited a study of the Gross National Product during 1947-1965. The GNP almost doubled while the work force only grew by thirty percent and the average hours worked remained constant. Although there is no statistical evidence to indicate how much of the gowth in GNP was attributable to technological innovation, they are confident it played a major role.

The following chart taken from the report is an illustration of three industries which accounted for more than $13 billion in growth of the GNP during the period of the study.

ECONOMIC EFFECTS OF ONLY THREE TECHNOLOGICAL INDUSTRIES OUT OF MANY [1]

In 1945, the TELEVISION, JET TRAVEL, and DIGITAL COMPUTER industries were commercially non-existent.

In 1965, these industries contributed more than $ 13 BILLION to our GNP and an estimated 900,000 jobs . . . and very important, affected the QUALITY of our lives.

A current study by Professor Paul Grogan of the University of Wisconsin-Extension, Engineering Department on expenditures by industries for Research and Development shows the following facts.

TYPE OF INDUSTRY	LEVEL OF R & D EXPENDITURE	LEVEL OF R&D EXPENDITURE AS % OF GROSS COST OF TOTAL OPERATION
I. Extractive industry: coal mining; quarrying; minerals, petroleum and gas exploration and production; etc.	Average of 9 firms $1,471,000	.44
II. Durable goods mfg.: machine tools; tools and machinery; including electrical; automobiles and related products; power and motive apparatus	Average of 9 firms $1,000,000	1.2
III. Consumer goods, exclusive of autos: builders supply; appliances; furniture; food; clothing; printing; publishing	Average of 10 firms $3,700,000	.35
IV. "High technology" industry; electronics; computers; communications; advanced aerospace & defense components, etc.	Average of 4 firms $750,000	.9

V. Chemical industry: refining; feedstocks; fibers; plastics; synthetics; pulp and paper mfg.: etc.	Average of 15 firms $6,306,666	2.8

POTENTIAL AREAS OF APPLICATION TO THE EDUCATIONAL ENTERPRISE

The first consideration for applying successful techniques and methods to the educational enterprise is to examine the distinctions between the missions, goals and objectives of education and industry. This paper will not belabor the obvious differences. The similarities seem to be that industrial and educational units are comprised of small and large organizations trying to accomplish results through people. Both have procedures, paperwork, data processing operations, costs of materials and salaries of personnel. Although it is more difficult to measure the output of a teacher than that of a secretary or production worker there are standards of performance, ratios of students to teachers, student knowledge tests and other forms of measurement which can be used to establish effectiveness.

The first recommendation is to eliminate the term productivity and replace it with the term effectiveness improvement. A proposed definition or organizational effectiveness by Georgopoulos and Arnold Tannenbaum may be more appropriate than the input-output approach. They suggest defining organizational effectiveness as: "the extent to which an organization as a social system, given certain resources and means, fulfills its objectives without incapacitating its means and resources, and without placing undue strain upon its members."9

Improvement usually requires change. We customarily believe that people resist change. Mogensen claims that people do not resist change but rather resist someone else trying to change them. His approach to managing improvement is to involve the people who can develop the improvements. If improvements are to be made in a school system it will require cooperation from all personnel. There are functions in every system that have never been exposed to a methodical

study, one that examines every operation and the performance of the personnel in those operations.

How to start:

Someone should be designated to coordinate the effort, not someone who can be spared, but rather a person whose effectiveness is respected. Second, priorities for studies should be based on an economic analysis of the high cost areas in the system. Normally salaries will account for 80% to 90% of total operation cost. Priorities should be established and personnel should be trained in techniques such as work simplification and value analysis. Potential areas for improvement, in addition to high costs, are situations like meetings which consume large amounts of time, operations which appear to produce lots of waste, systems which have bottlenecks. Additional check lists are provided later. Finally, provision should be made for feedback to personnel on action taken to implement suggestions for improvement. Recognition for outstanding improvements which are implemented is another essential factor in successful programs in the private sector.

THE ROLE OF THE WISCONSIN EDUCATION ASSOCIATION IN EFFECTIVENESS IMPROVEMENT

It will not be possible to make noticeable improvements in effectiveness in Wisconsin school districts without cooperation from the W.E.A. Experience in the private sector has shown that management and organized personnel must work together to improve effectiveness. Since effectiveness is related to attitude, it may require a change in attitude concerning unnecessary positions. Also, equipment and supply curtailment will have to be reckoned with in the coming years to meet unit cost controls essential to satisfy taxpayers.

THE ROLE OF STUDENTS IN EFFECTIVENESS IMPROVEMENT

Effectiveness improvement requires the participation of everyone in an organization. Students can help cut costs in the following ways:

1. Reduce vandalism.
2. Assist maintenance staff.
3. Superior students coach below-average students.
4. Conduct studies of operations (high school level) such as cafeteria, preventive maintenance, paperwork, procedures, data processing.
5. Evaluation teams work on problems of high costs with faculty guidance.

A successful technique used in the private sector for reducing paperwork is a concept developed in the 1930's by Allan Jogensen. It consists of a five-step pattern used in many problem-solving systems. It employs some tools for analyzing present paperwork procedures, forms, and systems to eliminate duplication and unnecessary paperwork. The five-step pattern for improvement is:

1. Select a job to improve.
2. Get the information about the job.
3. Develop alternatives for making the job easier.
4. Select the best alternative.
5. Install the improvement.

Specific tools which are applicable in the educational environment are the flow process chart (figures 2 and 3) and the procedure chart and flow diagram (Figure 4). The flow process chart can be used to analyze the steps required to process forms or for operations such as the food service or janitorial services. It will present a breakdown of operation which makes unnecessary steps conspicuous. Frequently in business use of a flow chart has eliminated forms and operations completely. A common slogan in business is, "If you have been doing it the present way for five years, there is a better way to do it." The underlying philosophy is, "work smarter, it's easier."

The paperwork systems chart (Figure 4) illustrates steps performed to process various forms in the system. Frequently an analysis can eliminate forms, steps, and sometimes the procedure itself. Paperwork normally increases in an organization. An examination of all the forms used by an organization can reveal duplication. Since school systems have purchasing departments, maintenance departments and business offices performing functions which are identical to those in the private sector, I know these techniques can be used to make improvements by the employees in those areas because of personal experience in Honeywell, Coors Porcelain Division, John Deere and many other firms.

QUESTION EACH DETAIL

WORK SIMPLIFICATION CONFERENCES
LAKE PLACID, N. Y.

Figure 2

FLOW PROCESS CHART

NO. 1
PAGE 1 OF 1

SUMMARY

	PRESENT NO.	PRESENT TIME	PROPOSED NO.	PROPOSED TIME	DIFFERENCE NO.	DIFFERENCE TIME
○ OPERATIONS	15					
⇨ TRANSPORTATIONS	2					
□ INSPECTIONS	2					
D DELAYS	5					
▽ STORAGES	1					
DISTANCE TRAVELED	600 FT.		FT.		FT.	

JOB Fill Out and Approve Form X

☐ MAN OR ☑ MATERIAL Form X

CHART BEGINS In A's desk drawer

CHART ENDS In A's out box

CHARTED BY AHM DATE 4/15/53

	DETAILS OF (PRESENT / ~~PROPOSED~~) METHOD	○	⇨	□	D	▽	DISTANCE IN FEET	QUANTITY	TIME	NOTES
1	In A's desk drawer									No definite location
2	Removed and placed on desk									Disorderly desk
3	Filled out									Original & 4 copies
4	Placed in OUT box									Long reach
5	Waits									For messenger pick up
6	Picked up by messenger									Difficult grasp
7	To B's office						300			Delay in rest room
8	Placed in IN box									
9	Waits									
10	Picked up by B									Difficult grasp
11	Examined									
12	Signed									
13	Placed in OUT box									Long reach
14	Waits									For pick up
15	Picked up by messenger									Difficult grasp
16	Back to A						300			
17	Placed in IN box									Location of box bad
18	Waits									
19	Picked up by A									
20	Read									
21	Paper clips removed									
22	Carbons and copies separated									
23	Reassembled									
24	Placed in OUT box									Long reach
25	Waits									For messenger pick up

QUESTION EACH DETAIL

WORK SIMPLIFICATION CONFERENCES
LAKE PLACID, N. Y.

Figure 3

FLOW PROCESS CHART

NO. 3
PAGE 1 OF 1

SUMMARY

	PRESENT NO.	PRESENT TIME	PROPOSED NO.	PROPOSED TIME	DIFFERENCE NO.	DIFFERENCE TIME
○ OPERATIONS	15		4		11	
⇨ TRANSPORTATIONS	2		0		2	
□ INSPECTIONS	2		0		2	
D DELAYS	5		1		4	
▽ STORAGES	1		1		0	
DISTANCE TRAVELLED	600 FT.		0 FT.		600 FT.	

JOB Fill Out and Approve Form X

☐ MAN OR ☑ MATERIAL Form X

CHART BEGINS In A's desk drawer

CHART ENDS In A's out box

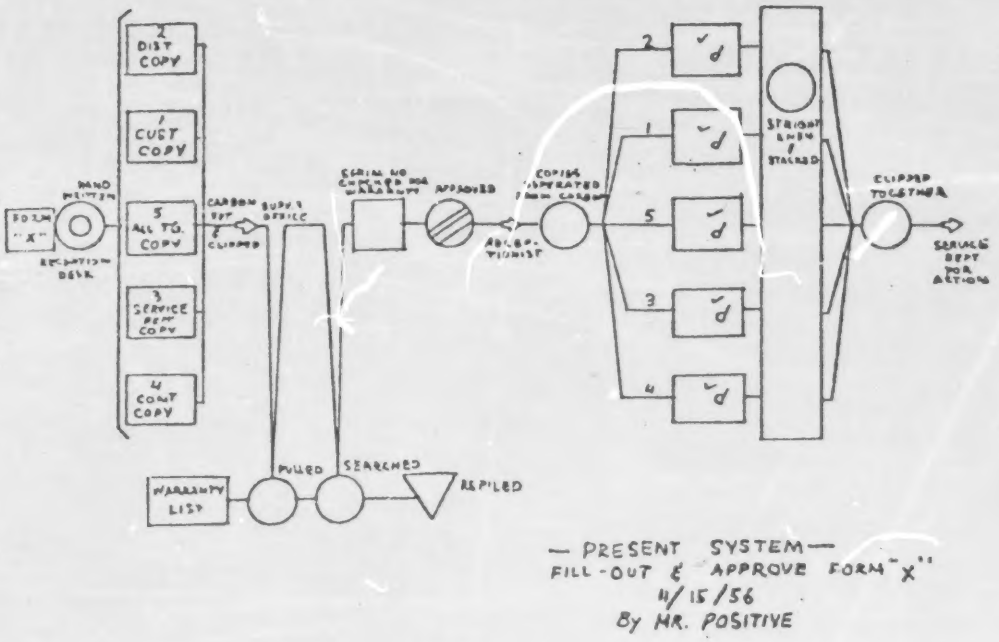
CHARTED BY AHM DATE 4/15/53

	DETAILS OF (~~PRESENT~~ PROPOSED) METHOD — 2ND	OPERATION	TRANSPORT	INSPECTION	DELAY	STORAGE	DISTANCE IN FEET	QUANTITY	TIME	POSSIBILITIES: ELIMINATE	COMBINE	REARRANGE	CHANGE: PLACE	PERSON	SEQUENCE	NOTES
1	In A's desk drawer	○	⇨	□	D	▽										
2	Removed and placed on desk	○	⇨	□	D	▽										
3	Filled out and Signed	○	⇨	□	D	▽										Original & 4 copies
4	Carbons and copies separated	○	⇨	□	D	▽										
5	Placed in OUT box	○	⇨	□	D	▽										
6	Waits	○	⇨	□	D	▽										
7		○	⇨	□	D	▽										
8		○	⇨	□	D	▽										
9		○	⇨	□	D	▽										
10		○	⇨	□	D	▽										
11		○	⇨	□	D	▽										
12		○	⇨	□	D	▽										
13		○	⇨	□	D	▽										
14		○	⇨	□	D	▽										
15		○	⇨	□	D	▽										
16		○	⇨	□	D	▽										
17		○	⇨	□	D	▽										
18		○	⇨	□	D	▽										
19		○	⇨	□	D	▽										
20		○	⇨	□	D	▽										
21		○	⇨	□	D	▽										
22		○	⇨	□	D	▽										
23		○	⇨	□	D	▽										
24		○	⇨	□	D	▽										

Figure 4

PROCEDURE FLOW CHART

For drawing a picture of the flow of paperwork in a record system.



It is applicable when every document in a paperwork system is to be depicted, graphically, in such a way as to show the step-by-step handling of each document and the relationship between all documents in the system.

Another technique which is used successfully in the private sector to develop improvements is value analysis. This concept was developed in the purchasing department in the General Electric Company in 1947. The key element in the approach is to identify the basic function of a service or product and then, through creative-thinking techniques by a team, to develop more economical ways to provide the function(s) without sacrificing quality. This approach can be used in the educational enterprise to examine services, courses, positions, and equipment, particularly in new building construction, to determine their value or worth in accomplishing objectives.

Industry usually finds through analysis that eighty or ninety per cent of its costs are incurred in employee payroll. Naturally the elimination of unnecessary positions is the most effective way to reduce costs. Nonproductive positions and overhead are the primary targets in the private sector.

Although there is a surplus of teachers in certain fields at the present, it may be essential to eliminate unnecessary positions. Retraining some teachers for needed positions in special education may be a solution to positions eliminated in elementary education and other areas where there appears to be a surplus of talent.

TIME MANAGEMENT AND PERSONAL EFFECTIVENESS

Better time utilization by all professional personnel is an area recommended for consideration.

Educators may be helped by the following ideas and check lists which have led to managerial improvement in the private sector.

The following daily plan (Figure 5) helps to determine priorities. First, things that have to be done are listed on the sheet. Priorities are then assigned, with a specific time allocation for each task. The evaluation column helps determine progress toward accomplishments.

Figure 5

A plan for "making it happen"_____

1A = Urgent (probably involves others -- include items for immediate delegation)

1B = Urgent -- must be done today

2A = Delegation in general

2B = "Touch base" on former delegation

3 = Planning

4 = Can wait

NO.	PRIORITY	THINGS TO DO	TIME ALLOCATED	EVALUATION

CONCLUSION

Improving the effectiveness of any organization requires cooperative effort by all personnel. Since improvement requires change, it also involves changing attitudes. Experience in education shows that this area takes the greatest time. Obviously an organization cannot be turned around overnight since the people in the organization must cause it to happen. Although it takes time to achieve maximum efficiency, this must not be used as an excuse to defer starting. The start-up, objectives, plans and future action steps should be developed with utmost care. It is more difficult, and time consuming to correct a "planned failure" than to proceed cautiously in the right direction. Interest will grow as improvements become apparent.

It is a mistake to assume that improvement will happen by itself because of the nature of the professional staff. Serendipity is not good planning. Successful administrators make things happen!

There are risks in any effort of this magnitude but the rewards from improved effectiveness should justify the risks.

FOOTNOTES

[1] Bernard M. Bass, Organizational Psychology, Allyn and Bacon, Inc., Boston, 1965, p. 15.

[2] Robert A. Sutermeister, People and Productivity, McGraw-Hill Book Co., Inc., New York, 1963, p. 99.

[3] Ibid., p. 101.

[4] William Glasser, M.D., The Identity Society, Harper and Row, New York, 1971, p. 28.

[5] Ibid., p. 28.

[6] Productivity and Profit Report, ed. William F. Schleicher, Vol. 3, #21 (November 15, 1974), p. 1 & 2.

[7] Ibid., Vol. 3, #22 (November 30, 1974), p. 3.

[8] Herman S. Jacobs, Executive Productivity AMA Survey Report, American Management Association, 1974, p. 2 & 3.

[9] Robert A. Sutermeister, People and Productivity, McGraw-Hill Book Co., Inc., New York, 1963, p. 104.

[10] Denison, E., The Sources of Economic Growth in the United States, Committee for Economic Development, 1962; Kendrick, J., Productivity Trends in the United States, National Bureau of Economic Research, 1961; and Solo, R., "Technical Change and the Aggregate Production Function", Review of Economics and Statistics, 1957.

[11] Technological Innovation: Its Environment and Management, U.S. Department of Commerce, January 1967, p. 4.

ED126570

SOME CONCEPTS TO CONSIDER IN MEASURING THE IMPACT OF SEA AND LEA SERVICES

by

Stanley A. Rumbaugh

EA 008 512

78

Government leaders and citizens have, in recent years, increased the call for greater productivity in all phases of the public sector. Increasing inflationary pressures on governmental expenditures and services along with the concomitant limitations on human and financial resources threaten to jeopardize both the quantity and quality of these governmental services. High unemployment rates have resulted in severely reduced revenues for government while, at the same time, demands for many types of governmental services have increased at an almost unprecedented rate. The public sector, caught in the vicious cycle of decreased revenue and increased demands for service, has in many cases been forced to implement selective and across-the-board budget cuts and other austerity measures.

All of this has contributed to the popular notion that the public sector must get "more bang for the buck". Somehow governmental agencies and employees must provide more services with fewer human, financial and material resources. The underlying assumption is that government is inefficient and that public servants, whether they be teachers, legislators or "bureaucrats" are lazy and are cheating the taxpayer.

The popularized notion and assumptions of productivity and the need for its increase are overly-simplistic and, indeed, may be incorrect. However, the basic facts still remain, and serious attempts to identify means for increasing public sector productivity must be explored.

The public is likely to increase its demands that tax resources be spent wisely and efficiently. Legislative and executive branches are likely to respond to public pressures by exerting more and more influence over decision-making functions formerly considered the province of the bureaucrats.[1]

The remaining portions of this paper will deal with some of the problems associated with identifying and measuring productivity in state and local educational agencies. It is expected that the comments contained herein will result in more questions than answers. However, only by raising the issues, can a rational, reasoned and systematic approach to productivity in that part of the public sector which is responsible for education be developed.

Productivity has been defined in numerous ways, ranging from simple statements such as "to get more bang for the buck" to complex economic models. Ross and Burkhead have indicated that there is much confusion about the meaning of productivity.

> Although the concept itself is simple enough, its use by the popular press, labor unions, and politicians has elevated productivity to the point that it has now become one of those sacred economic goals for the nation to strive for, and which under no circumstances should be questioned. The result is a great deal of popular confusion concerning exactly what productivity means.[2]

The confusion is further confounded by the inability to directly transfer productivity measures from the private sector to the public sector. There is, therefore, no commonly accepted definition for productivity or for measures of productivity in the public sector.

Ross and Burkhead[3] have defined productivity as a measure of efficiency usually expressed as the ratio of the quantity of output to the quantity of input used in production of that output. They further indicate that productivity measures refer to the relationship between inputs and final outputs. This definition distinguishes productivity measures from measurement of efficiency, effectiveness and work activities.[4]

The present paper recognizes, along with Ross and Burkhead that within the public sector, it is extremely difficult to measure final outputs. Much

of the work of the public sector is service oriented and aimed toward the improvement of the general well-being of the citizenry. Thus, a goal of a State Highway Department may be to improve the capability of citizens to move rapidly, safely and economically thoughout the state. The number of miles of highway constructed could be measured. However, the measure would be just that (in miles of highway constructed), and does not really measure the over all improvement in the state's transportation system, as it affects the general well-being of the citizenry.

Likewise, in a state education agency, measuring the increase in the number of program evaluation reports does not provide an explicit measure of the primary agency goal, that is, to improve the learning of children, youth and adults.

Thus, measurement of productivity in a public agency such as a state or local education agency is severely hindered by two factors: (1) difficulty in clearly defining the final outputs of public services which by their very nature are perishable and leave no physically measurable unit and (2) difficulty in selecting suitable proxies as estimates of the output.

The following comments will suggest that state and local education agencies need to address both of these difficult aspects of the problem. It will also be suggested that, at least initially, such agencies probably need to be suggested that, at least initially, such agencies probably need to be more concerned with measuring the impact of their actions rather than productivity, per se. This will require (1) clear identification and selection and prioritization of goals and objectives; (2) identification of appropriate audiences or recipients of services; (3) explication of desired impacts of service; and (4) development of and adequate information base for determining whether the desired impacts are being achieved.

As these issues are addressed by agency management, they must also keep in mind the limitations of resources and the over-all impact on employee morale, motivation and self worth. These represent realistic constraints on the development of any systems oriented plan. That is, the plan should be meaningful and useful to those who are charged with its implementation.

Goals and Objectives

> Religion, morality and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged. The legislature shall maintain and support a system of free public elementary and secondary schools as defined by law. Every school district shall provide for the education of its pupils without discrimination as to religion, creed, race, color or national origin.[5]

Virtually every state constitution contains a broad "mission statement" regarding education as is quoted above. The ultimate goal of those responsible for education is, thus, clearly one of improving the general well-being of the state's citizenry. The output desired is an "educated" or "better educated" citizenry. Such a timeless philosophical statement and its associated outputs can be directly measured. Thus, additional goals and objectives must be established.

The most serious difficulty faced by education agencies in determining the impact or consequences of their actions is the lack of a clearly defined and prioritized set of goals and objectives.

Establishing goals and objectives is to some extent a political process, "forging a consensus among the conflicting values of legitimate policy makers and their constituents".[6] This goal-setting process results in a myriad of possible goals (whether or not they are formally stated) to be addressed. The question which must then be addressed is: "Given limited resources, which goals and objectives can realistically be addressed?" What are realistic attainment targets?[7] This requires a priority setting of goals and objectives which have

attainable results given practical resource considerations. By eliminating or deferring unattainable or less relevant goals and objectives and available resources may be more precisely focused on the delivery of priority services. This is the first step toward improving that elusive genie, productivity.

The Audience

If asked, a vast majority of professional employees in state education agencies would indicate that the primary recipients of their services are students in the public schools. From a purely philosophical point of view this is true, and state education agency personnel should constantly ask, "how are my activities likely to impact on children and youth?" However, from a practical point of view, the school students are seldom the direct recipients of services from the state education agency. Rather the primary recipients of services are usually some intermediary audience (frequently local school district officials). This confusion between the ultimate recipients (the students) and the actual or intermediary recipients of service leads to a confusion in measuring the impact of services. SEA staff may attempt to measure the consequences of their service by measuring changes in behavior of students when, in fact, the impact should be measured in terms of the behavior of the intermediary recipients.

For example, state evaluation staff are responsible for providing information for use in making educational program decisions. Philosophically speaking, this information should result in improved educational programs which enable improved student learning and performance. However, the direct impact of the service is not upon students but on state level program decision-makers. This intermediary audience uses the information in providing service to local program decision-makers who in turn may have a direct or indirect (through the classroom

teacher) impact on students. Thus, each group in this chain needs to clearly define its audience and attempt to measure the impact of direct services. Only when the whole chain has completed action can the ultimate impact be determined. Even then proxy measures often must be used (i.e., test scores, decreased drop-out rates, etc. are only proxies of actual improvement in learning and performance of students).

The Impact

Once goals and objectives have been identified and the appropriate audience(s) specified, service activities need to be established. These systems for delivering services may vary according to the objectives and/or the audience being served. For example, in-service training and consultation may be used by SEA staff in delivering services to local school district personnel while local district staff would devise various teaching strategies to provide instruction to students.

Regardless, however, of the delivery system used, it should be based on the needs of the audience which is to receive the service. Inadequate assessment of needs is a major cause for so-called failure in delivery of services in education.

The delivery system also should be devised in a manner which is realistic within available resources constraints. For example, if 1,000 students in a school district are in need of compensatory education but sufficient resources are made available to serve only 500 students, district staff should not be expected to stretch the resources to serve the entire population in need.

Once the service delivery systems are established, impact criteria may be developed. In many program budgeting systems, these impact criteria are stated as the ratio of the quantity of output to the quantity of need. Specification of the output measures represents a measurement problem that is beyond the scope of this paper. However, it must be recognized that most output measures

in education are really proxies of output. Further, they are frequently very difficult to quantify.

In the previous example, let us further assume that staff determine that an acceptable measure of output is a month gain in achievement per month in the compensatory education programs as measured by a norm-referenced reading achievement test. The impact may then be measured numerically by dividing the number of students achieving at this rate by the number in need. If 300 students achieved at the rate of a month per month, the impact ratio for the school district would be 300/1000 = .3. However, since resources were made available to serve only 500 students, the impact ratio of the compensatory education staff would be 300/500 = .6.

Over a period of time, the school district can devise a number of ways to improve its impact ratios and thus, in a sense develop an improved productivity.

The Information System

If the ideas suggested in this paper are to be successfully implemented it is essential that an adequate information system be implemented so as to provide decision-makers at all levels sufficient data to monitor and evaluate their efforts.

Data are needed to accurately establish goals and objectives, to determine the needs for service, and to measure the outcomes of that service. The information system should be developed so that those personnel most closely involved with providing direct services will have quick and efficient information regarding their efforts. Further, those individuals providing the direct services will have need of more detailed information than those who provide indirect services.

For example, a classroom teacher should have information about the progress of each pupil in the classroom. The information collected through the

normal test-teach-test cycle of instruction could be recorded on a pupil progress profile instrument. These data could then be aggregated at the building or district level for use of decision-makers outside of the classroom.

Likewise, state education agency staff should develop an information system which would enable them to monitor and evaluate their services.

The information system should be designed so that staff at each level in the heirarchy will be able to determine whether the desired impacts are being achieved. Thus, a measure of quality control needs to be built into the system to assure that the output measures are related to the impacts.

Summary

Improvement of productivity in education is fraught with many difficult problems. This paper presents some issues that must be addressed before "productivity" can be measured. Each of the issues raised herein contain numerous possible pitfalls for which there are no easy solutions. Thus, there are undoubtedly more questions than answers imbedded in the contents of the paper.

It is suggested that state and local education agencies should be concerned with measuring the impact of their actions rather than productivity, per se.

In the private sector productivity is usually defined as the ratio of the quantity of output to the quantity of input. An alternative is suggested for state and local education agencies, namely that a measure if impact be developed which would be defined as the ratio of the quantity of output to the quantity of need.

The paper recognizes that there is a great deal of difficulty in adequately measuring outputs in the public sector and particularly in education. In most instances, proxy measures will need to be used. However, by emphasizing the improvement of impact at each level in the educational hierarchy, a system

for overall improvement of productivity can be established which is cognizant of both the difficulty in measuring outputs and of the subtle mixture of "inputs" or human, natural, and financial resources that are involved in delivering services to children and youth, based on identified needs.

The critical issues which must be addressed in implementing an "impact improvement program" seem to be: (1) identification and prioritization of goals and objectives; (2) identification of appropriate audience or recipients of services and their needs: (3) explication of desired impacts; and (4) development of an information base for monitoring and evaluating the delivery of services.

REFERENCES

1. Archie A. Buchmiller, An Overview of Productivity in Government and the Public Services (Madison, Wisconsin: Wisconsin Department of Public Instruction, 1975), p.1.

2. John P. Ross and Jesse Burkhead, Productivity in the Local Government Sector (Lexington, Massachusetts. D.C. Heath and Company, 1974), p.6.

3. Ibid., p. 5.

4. Ibid., p. 14.

5. Constitution of the State of Michigan of 1963, article 8, Sections 1 and 2.

6. Edmond H. Weiss, "An Inverted View of Educational Planning", Administrators Notebook (Chicago: The University of Chicago Midwest Administration Center), XIII, No. 2 (1973).

7. Ibid.

ED126571

IMPLEMENTING A PRODUCTIVITY SYSTEM AT THE STATE EDUCATION AGENCY LEVEL

Prepared by:

James W. Colmey

EA008513

Implementing a productivity system at the state education level suggests that a productivity system does not presently exist. Of course, this is not true. State departments of education have produced outstanding educational achievements. Nevertheless, when compared to other productive enterprises, state education agencies have historically emphasized regulatory, political, and funding activities without a sufficient emphasis upon producing the desired results in meeting statewide educational objectives. This has been true because states have traditionally delegated educational responsibilities to local education agencies.

State education agencies are increasingly designing programs to meet unique state goals and are implementing them on a statewide basis. Obviously, as the latter purposes and intents impact on educational programs at the local level, a new concept of a productivity system at the state education level becomes essential.

Types of SEA Productivity Systems

State education agencies are organizing and developing programs that increasingly recognize the difference between the following types of state education productivity systems:

(1) Distributing money for productivity in education to be defined and implemented at the local level within "state minimum standards" regulated by the state education agency; and

(2) Promoting or installing state educational programs designed to increase productivity in education.

The first system provides a means for a state education agency to assist educational productivity in the state by increasing funds from the state to local educational agencies. This approach depends upon each local school system to develop, test, install, and operate all instructional programs. Since the introduction of this "state aid" concept three decades ago, state education agencies have successfully pursued this goal and its related

minimum standards." This productivity system has successfully increased funds for education and has changed the environment in which education takes place (class size, school size, bus size, window size, linear feet of blackboard, etc.). Unfortunately, the learning environment has sometimes been damaged. Inept finance formulas can: 1) preserve one room schools and small school districts; 2) establish and maintain inflexible and inappropriate facilities and instructional materials; and 3) create and extend a variety of inequities.

The second system provides a means for a state education agency to assist educational productivity through a new arrangement of educational resources within the state that may or may not require new funds. Since traditional staff organizations and management skills are not effective in this newer productivity system, some states are reorganizing and training staffs to meet changing requirements.

Current SEA Productivity System Requirements

State education agencies in this decade must be organized to plan, develop, evaluate and promote or install education programs to meet cost effective and educational objectives demanded by citizens through their elected representatives, or to be able to propose and obtain acceptance of alternative objectives. Successfully tested programs with political support and adequate operational funds must be available before implementing teams can effectively begin to promote or install state education programs. It is also essential to have an accepted plan and a responsible timetable for implementation.

The state plan should be drawn up carefully and explained to all persons directly or indirectly involved. State legislatures should appropriate funds to develop an acceptable plan of this type before operational funds are appropriated. Frequently, operational funds are appropriated to meet a specific purpose (i.e., a program completely new to the state) without a responsible state plan. In these instances, failures frequently occur, state department personnel

and local education personnel are critical of each other, and the legislators denounce "educators as incompetent." As a result, children suffer.

Assuming that planning, development, and testing considerations are adequately met, the state education agency personnel can turn their attention to the following:

(a) Staffing for implementation (centralized/decentralized; specialists/generalists; etc.)

(b) Types of products to be implemented (major/minor; new/modifications; etc.)

In staffing for implementation of statewide programs, it is important to consider the skills required by personnel who are to carry out this function directly. Implementation skills and program content skills are quite different; the most effective implementors have both. Usually, these are implementors who have been carefully trained in program content and teaching skills required. Sometimes, a team of implementors and program specialists can be used effectively.

If the decision is made to use program specialists, they should phase out of a state employment when their special function is complete. If a generalist is selected to carry out the implementation function of a program, it is important to emphasize the specific kinds of program training that are required before the person can effectively carry out these responsibilities.

Also, consideration has to be given to a centralized or decentralized staff. A centralized staff is easier to direct but allows less time for consulting or training personnel in the local school systems. If implementing personnel are decentralized, it becomes important to determine what independent decision-making responsibility will be delegated to these persons. If decentralized decision-making is not part of this option to decentralize, its purpose will be defeated, as local agencies will have to be referred back to the capital city staff.

Types of education products to be implemented at the state level vary in many ways. Some may be modifications to existing programs while others may be

completely new to the state. Some education products require three to five years to develop, test, and implement. The development effort should include extensive training programs and materials. Also, it is particularly important to time and sequence activities to clarify who does what and when.

Examples of SEA Productivity System Applications

Let's consider some specific examples of problems that require different implementation approaches. Suppose the state's problem is to extend a system of grades 1 through 12 to include a kindergarten program for five year old children. A multi-year state plan is needed. In this example, there are excellent programs and learning materials that have been developed and evaluated over decades that could be selected and used for the state's kindergarten program. There probably would be little justification for developing a program and materials for use throughout the state in any unique way with the heavy start-up expenditures that would be involved.

On the other hand, teacher training programs in the state and teachers in the public school system would not likely be adequately prepared for the special teaching opportunities and objectives in the kindergarten program. Therefore, it would be essential when implementing the statewide program to have inservice and pre-service training programs available in the state. It would not be reasonable to expect to employ all the specialized teaching personnel required by the program from states where kindergarten programs had previously been in existence.

Another requirement throughout the state would be the construction of new facilities for the kindergarten program. This facility problem might have the added complication (if enrollments had been declining) of determining which schools would need new construction and which schools in the state would require modification of existing facilities. There is the further consideration of what types of spaces are required for the kindergarten program selected.

In this example there would be major start-up costs and activities related to training and construction. Only limited start-up costs and activities would

be required for program and materials development since these start-up costs and activities would be primarily related to an appropriate means for the selection of a program and materials.

A second example might be the problem of improving reading in grades 1 through 3. It could be reasonably assumed by teachers in the first three grades and the school principals in the elementary schools and even the superintendents of schools in the districts that they were already doing a good job in reading and that more books and more teachers would be the only way to improve the program. Of course, this could possibly be true, but it is highly unlikely.

A situation might exist in a state where teacher certification for the primary grades had not included the requirement of the competency to teach reading except for more recently certified teachers. The state requirement for implementation might be to provide training for the group of teachers who had not previously had formal instruction in the teaching of reading or require them to go back and take additional college work. In the latter case, it might be necessary to subsidize this training as part of the start-up cost of the state reading improvement program. In addition, training materials should be selected or developed if the state education agency was directly responsible for training.

In recent years, state education agencies have faced the problem of providing an adequate education for children with special handicaps in local school systems. In this third example, states have generally followed one of the following two approaches:

1) Provided additional funds on a weighted formula basis indicating that local education agencies would receive additional "state aid" funds in differing amounts for children with different handicaps; or

2) Provided additional funds in the amount necessary to carry out specific programs previously developed and tested.

Children with some types of handicaps that have traditionally attended resident institutions for the deaf, blind, and multiply handicapped may be

transferred in large numbers to local education agencies. It may be necessary to develop new special education programs, test them, evaluate them, prepare them for local use, and then to assist and audit the installation of these programs depending upon the legislative intent. Certainly an acceptable multi-year state plan is essential.

The three different examples discussed above illustrate that the timetables for implementation of different programs might vary from one year to five or more years depending upon the extensiveness of the program goals and objectives as defined by state legislative or state board action.

Conclusion

The essential activities for a productivity system at the SEA level are planning, development, evaluation, resource allocation, and implementation. Multi-year state plans that are well understood and accepted by those persons directly and indirectly affected are essential. Adequate funds must be available for both non-recurring and recurring expenditures. Also, a responsible timetable is required for implementation. Although a system of regulatory activities related to enforcement of state fiscal and program laws or standards will continue, these activities are not as likely to achieve the results intended by legislatures or state boards as the activities of a system that is designed to rearrange educational resources to meet specific state goals and objectives.

EXPLORING CONCERNS OF PRODUCTIVITY IN EDUCATION

October 28-29, 1975

Concourse Hotel
Madison, Wisconsin

Hosted by:

Wisconsin Department of Public Instruction
Madison, Wisconsin

Sponsored by:

Upper-Midwest Regional Interstate Project
(ESEA-V, Section 505)

AGENDA

Tuesday, October 28th

		Room
8:45	Registration	Diplomat
9:15	Welcome and Orientation.	Diplomat
	Dr. Barbara Thompson Superintendent of Public Instruction State of Wisconsin	
9:30	Keynote Address.	Diplomat
	"The Need for Productivity, Accountability & Cost Effectiveness In Education" Leon Lessinger, Dean University of South Carolina	
10:15	Coffee Break	
10:45	Exploring Productivity in Education.	Diplomat
	I. "History of Productivity and Research Needed in Education"	
10:45-11:00	Crist H. Costa Chairman of Educational Administration and Director of Center for Research & Evaluation, Rhode Island College	
	II. "Enhancing Productivity in the Public Services Sector"	
11:00-11:15	Leon Scan for Nancy Hayward National Commission on Productivity and Work Quality	

III. "Productivity in the Private Sector: Its Application to Education"

11:15-11:30 Fred Schwarz, Director
Executive Development Programs
Department of Business & Management
University of Wisconsin-Extension

IV. "Identifying and Defining Productivity Concepts and Establishing a Productivity Measurement Program at the SEA-LEA Levels"

11:30-11:45 Stan Rumbaugh
Coordinator of Evaluation & Research
Department of Education
State of Michigan

V. "Implementing a Productivity System at the SEA Level"

11:45-12:00 James Colmey, Assistant Chancellor to Administrative Affairs
(formerly Deputy Commissioner-State of Tennessee)
University of Wisconsin-Whitewater

12:00 Lunch. . . . . .Empire

1:15 Break-Out for First Topical Discussion/Mini-Workshop
(5 concurrent sessions: Conferees return to same rooms)
(Room break-out for Topical Discussion/ Mini-Workshops)
Topic I - Directors II
Topic II - Diplomat, Section 1
Topic III - Diplomat, SEction 2
Topic IV - Directors V
Topic V - Directors IV

2:15 Second Topical Discussion/Mini-Workshops (see rooms above)

3:15 Round-Table Discussion with Audience Involvement to Identify Emergent Needs & Issues of Productivity Existing at SEA-LEA. . . . . .Diplomat

4:30 Adjournment for the Day

Wednesday, October 29th

		Room
9:00	Proceedings for the Day. . . . . Robb L. Shanks, Wisconsin	.Diplomat
9:15	Third Topical Discussion/Mini-Workshop (Conferees return to rooms previously listed)	
10:15	Coffee Break	
10:45	Questions from the Audience with Opportunities for Sharing Productivity Experiences	.Diplomat
12:00	Lunch.	Empire
1:15	Summary of the Conference with Panel . . . . . Crist H. Costa, Rhode Island College Leon Scan, Commission on Productivity & Work Quality Fred Schwarz, University of Wisconsin-Extension James Colmey, University of Wisconsin-Whitewater	.Diplomat
2:30	Adjournment	

William H. Ashmore
Conference Coordinator
Wisconsin Department of Public Instruction
126 Langdon Street
Madison, Wisconsin 53702
(608) 266-7798